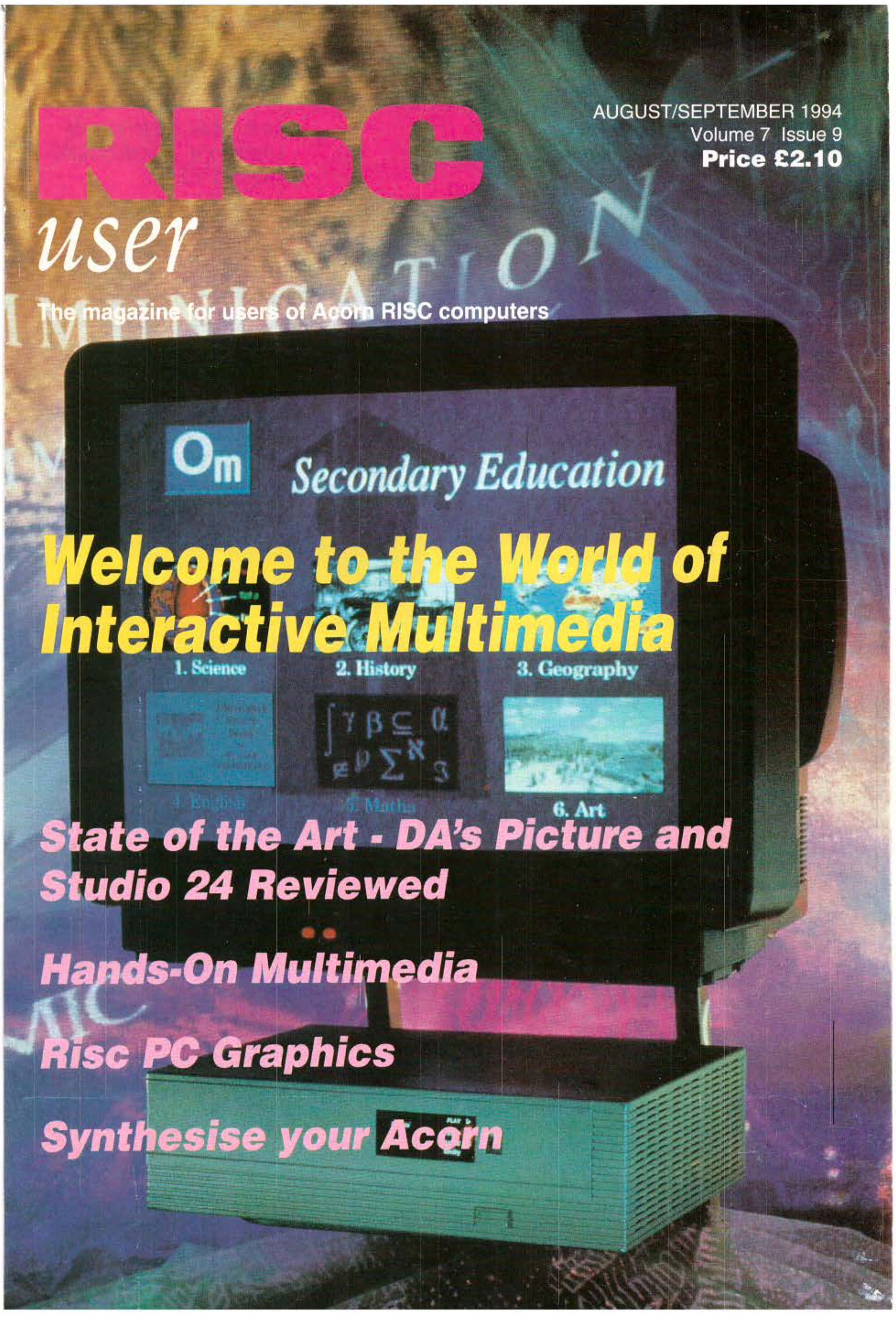
RISC user

AUGUST/SEPTEMBER 1994
Volume 7 Issue 9
Price £2.10

The magazine for users of Acorn RISC computers



Welcome to the World of Interactive Multimedia

State of the Art - DA's Picture and Studio 24 Reviewed

Hands-On Multimedia

Risc PC Graphics

Synthesise your Acorn

RISC user

THE MAGAZINE FOR USERS OF ACORN RISC COMPUTERS

As Lee Calcraft mentioned in his editorial last month, I shall be looking after RISC User for a while. It will be my second spell in the magazine's engine room, having been Technical Editor a few years ago, so I'm looking forward to renewing old acquaintances and making some new ones.

The future for Acorn, and by implication for RISC User, looks bright at the moment. We intend to capitalise on this fully, and to maintain RISC User's position as the leading subscription magazine in the Acorn market. We have always tried to make RISC User a thoroughly practical magazine - one which builds over the issues into a comprehensive body of knowledge available for reference in the future, rather than one which is simply read for the latest news and then discarded. We keep most back issues in stock, and if you want to find a particular article in a previous issue, the best way is to use ArcScan.

This approach makes RISC User ideal for the committed user, who wants to know how and why things work, to write programs, or to increase productivity by getting the best out of software and having access to useful ideas. But we also recognise that many less experienced users need to know at a very basic level what their computer can do for them, without being confused by the jargon that many of us take for granted. So we will be starting very soon a new section in the magazine for less experienced readers, with clear step-by-step descriptions of the basics, simple hints and tips, and explanations of the terms that are likely to confuse.

This will in no way replace our regular features, which will continue to bring you the kind of in-depth information for which we are renowned. No magazine that caters for diverse interest groups and expertise levels can ever please everyone all the time, but if you feel that your own areas of interest are not getting a fair deal, then do let us know - we compile the magazine to please you, not ourselves.

Interactive multimedia is the big story at the moment - see the article in this issue. Having written the article, I was interested to hear that a House of Commons Select Committee has urged the government to invest £15bn in the "information superhighway" by constructing a nationwide cable network for the purpose. It's open to question whether this will happen as the result of a nationwide project - it's more likely to be done piecemeal. But the important point is that when an idea is adopted by MPs, it usually indicates that it is already well established in the nation's consciousness. The omens must be good for companies such as Acorn who are ahead of the field.

Alan Wrigley

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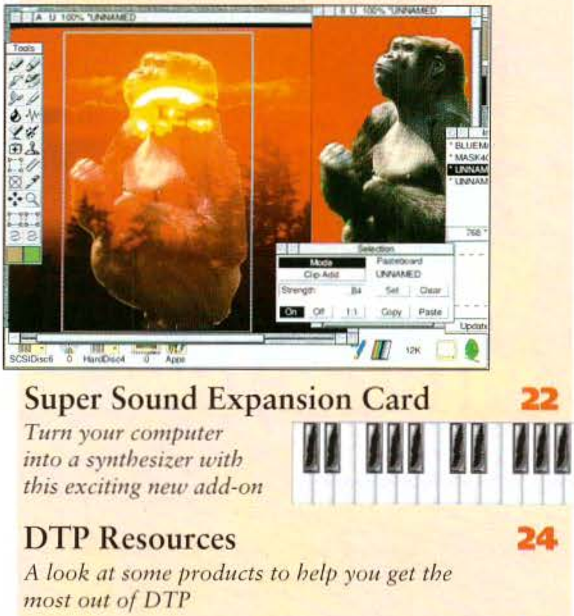

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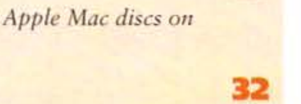

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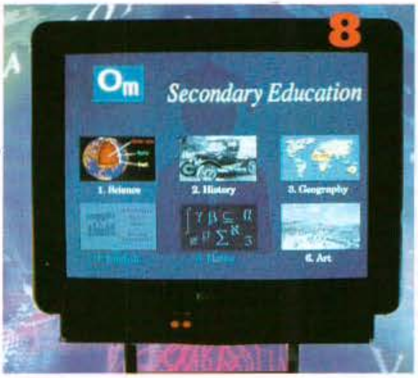

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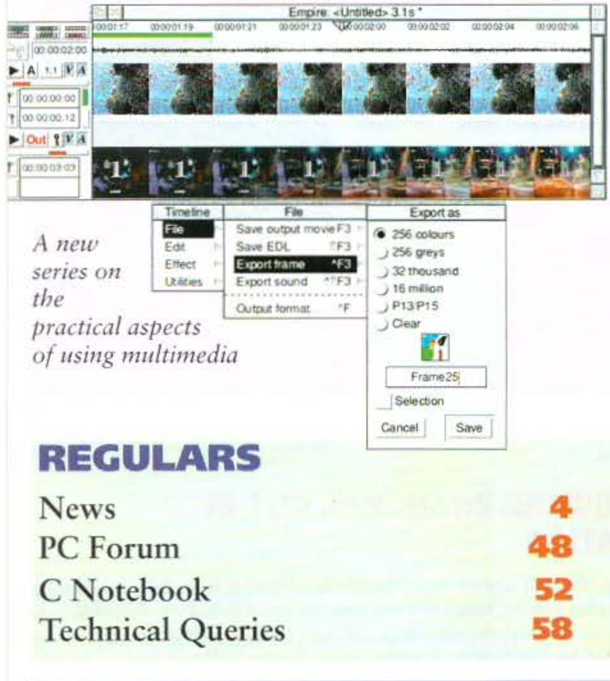

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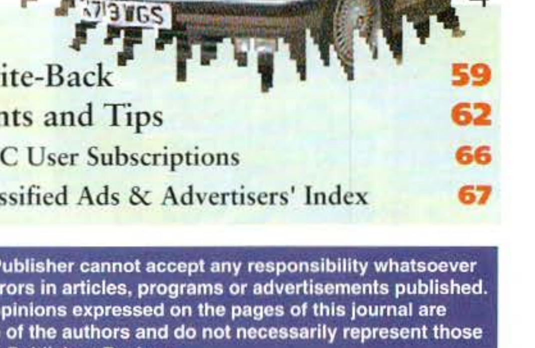

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News ...

THE ULTIMATE GAMES MACHINE GOES ON TOUR

The first of a new generation of games machines based on the ARM powered 3DO engine is about to hit Britain with a huge bang. On the 1st September this year Panasonic will be launching the *REAL FZ-1 3DO Interactive Multiplayer System*. The CD-based FZ-1 uses the revolutionary technology developed by ARM and the 3DO Company in the States to provide a powerful new interactive multimedia platform. It attaches to a TV set and will play music CDs, Photo CDs and custom 3DO CDs which will offer interactive entertainment and educational options for adults as well as children. Its recommended retail price has been set at £399.95 inc. VAT and the system will come with the exciting adventure game *Total Eclipse* from Crystal Dynamics.

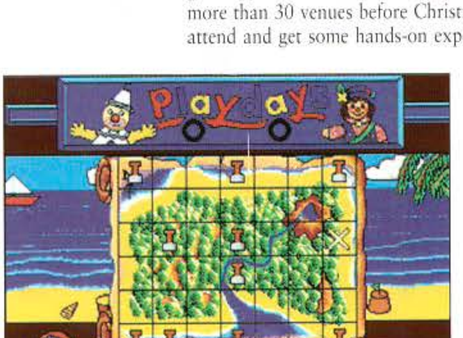
In order to give as many people as possible the chance to see and use the FZ-1 before it hits the shops, Panasonic is currently undertaking a nationwide tour in a unique 45ft long showliner truck which has been designed in the form of a giant replica of the FZ-1. The Panasonic Juggernaut Roadshow will be visiting more than 30 venues before Christmas, and anyone and everyone is welcome to attend and get some hands-on experience. To find out when the roadshow will be hitting your town, call the freephone Panasonic Juggernaut Roadshow hotline on 0800 444220.

MORE FOR YOUR POCKET

Acorn has announced a major new range of palmtop computers which builds on the success of its Pocket Book, of which 10,000 have already been sold. The Pocket Book II will be available in September, and will boast a larger, higher resolution screen, more memory and more built-in software. As well as the word processor, spreadsheet, database, calculator, clock and alarm featured in the original Pocket Book, the new range also has a diary, spellchecker, thesaurus, sound and voice recorder, mathematical equation plotter, world maps and time zones, and the OPL programming language. As well as the A-link for linking to Acorn desktop computers, PC and Apple links are now available. The improved software, larger screen and extra memory bring the Pocket Book II up to the specification of the Psion Series 3a on which it is based.

The price for the basic model of Pocket Book II (256K) is £229.74 ex. VAT, while the top-of-the-range model weighs in at 512K and costs £280.81 ex. VAT. The original Pocket Book is still available at £169.95 ex. VAT. As before, Acorn is supplying Class Packs consisting of 10 computers with mains adaptor, desktop links and printer links. For the Pocket Book this is priced at £1699.50, and for the Pocket Book II, £2297.45, both ex. VAT. For more details contact Acorn at Acorn House, Vision Park, Histon, Cambridge CB4 4AE, tel. 0223 254254, fax 0223 254262.

GAMESWARE BRANCHES OUT INTO EDUCATION



GamesWare, the well known Acorn games developer, is branching out into the education market with the launch of a new company called SkillsWare. According to its director, Simon Lovesey, the company's aim is to produce high quality educational products that are fun to use. SkillsWare's first release *Playdays*, now nearing completion, is based upon the popular children's TV series and designed for children between three to eight years old. *Playdays* features all the popular characters from the TV series who guide the player through thirteen different games and puzzles, and throughout the game the character Why Bird is used as a friendly guide and tutor. *Playdays* will retail for £25.99 ex. VAT and will be released in the late summer. For more information contact SkillsWare at The Kingley Centre, Downs Road, West Stoke, Chichester PO18 9BQ, tel. 0243 574574, fax 0243 547515.

ARM POWERED PARTNERSHIP GETS STRONGER

In a move that demonstrates the growing global presence and recognition of ARM technology, ARM Ltd signed up its seventh major partner on the 25th July this year. Asahi Kasei Microsystems Company Ltd (AKM) is a subsidiary of the US$12 billion Japanese chemical giant, Asahi Chemical Industry Company, and is one of the biggest and fastest growing suppliers of LSI (large-scale integration) integrated circuits to the telecommunications industry. AKM's product range includes image processing ICs used in fax machines and image scanners, signal processing ICs for cellular telephones, as well as components used in data acquisition, mass data storage and audio and multimedia applications.

The licence agreement with ARM gives AKM the right to embed the ARM7D 32-bit RISC processor design into its products, and also serves to strengthen ARM's penetration in the Japanese market, where AKM supplies almost all the major electronics companies.

Robin Saxby, Managing Director of ARM, welcomed AKM to the ARM partnership, stating, "ARM's market success is built upon the combined strengths of each of the members of our partnership. The addition of AKM ensures we have product and service breadth that is second to none. The openness of the ARM architecture boosts global proliferation of ARM products".

TV'S MOST FAMOUS RAG DOLLS GET COMPUTER LITERATE

Following its success with The Crystal Maze computer game, Sherston Software has secured another agreement to produce TV related software with Chatsworth Television, this time on behalf of Ragdoll Productions. As a result of this agreement, September will bring with it the first two in a series of Rosie and Jim talking activity programs for 4 and 5 year olds.

Duck loses his quack and *Jim gets the sneezes* feature the two cheeky rag dolls who are watched by millions of young fans. The stories are being brought to computer using the talking book technology developed by Sherston Software for its now well established Naughty Stories and Oxford Reading Tree software. The activities, which will feature the voices of the actors from the TV series, are enhanced with amusing animations and sound effects. Prices have yet to be announced. Further details from Sherston Software, who until September 2nd can be contacted at Swan Barton, Sherston, Malmesbury, Wilts. SN16 0LH, tel. 0666 840433, fax 0666 840048.

As from September 5th, Sherston Software's new address will be Angel House, Sherston, Malmesbury, Wilts. SN16 0LH. The telephone and fax numbers will remain unchanged. The company is moving in order to alleviate the problem of lack of space at its current split-site premises. The new offices will be situated in a refurbished sixteenth century pub in the village High Street.

MICROS FOR SPECIAL NEEDS EXHIBITION

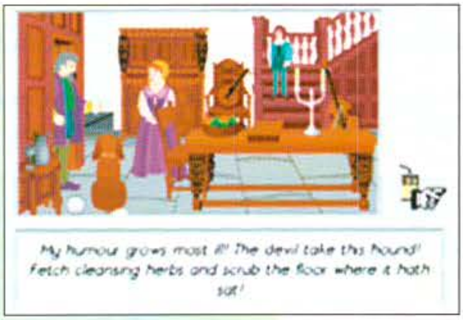
This October sees the launch of Semerc's 8th National Micros for Special Needs Exhibition. As Britain's foremost IT show for users with special educational needs, the show brings together under one roof a large range of software and hardware solutions for people with special needs, ranging from physical disabilities through to learning difficulties. The show takes place at the Queen Elizabeth Hall in Oldham on Thursday 6th and Friday 7th October, and products for Acorn, Apple and IBM platforms will be featured. Further information can be obtained from Martin Littler, Northwest Semerc, 1 Broadbent Road, Watersheddings, Oldham OL1 4HU, tel. 061 627 4469, fax 061 627 2381.

TRAVEL THROUGH TIME TO TUDOR ENGLAND

New from 4Mation is *Betsi*, an historical adventure aimed at 7-12 year olds. *Betsi* represents a return to adventure writing by Mike Matson who, in collaboration with the talented artist, Sue Edwards, has created an educational product which 4Mation believes is its best yet. Set in England at the end of the Tudor period (i.e. the end of the 16th century) the story revolves around Betsi the dog who, having been evicted from the royal hunting kennels for being too soft, is looking for someone to provide her with a comfortable home where she will be loved.

As Betsi searches for a new home she meets all sorts of interesting people ranging from vagabonds to the nobility. With 10000 words of text and dozens of beautifully drawn locations and animations, the program is crammed with historical information. A set of resource sheets contains 200 questions which will allow a teacher or parent to assess just how much information about the Tudor period a child has learned.

4Mation believes that *Betsi* fits well into the edutainment category and is ideal for use both at home and school. In the revised National Curriculum, Key Stage 2 pupils must study four out of five core units. Life in Tudor times is on of these units, and according to 4Mation *Betsi* fits perfectly into this area.



My humour grows most ill! The devil take this hound! Fetch cleansing herbs and scrub the floor where it hath sat!

Betsi costs £34.50 ex. VAT and is available from 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA, tel. 0271 25353, fax 0271 22974.

Wimp Programming for All

on Acorn RISC Computers

by Lee Calcraft and Alan Wrigley

We believe that Wimp Programming for All is the definitive book on this subject for all users of Acorn RISC computers.

This book provides programmers with a complete introduction to all the techniques involved in writing multi-tasking Wimp programs to run within the RISC OS desktop environment. No prior knowledge of the Wimp is assumed and the tutorial style of the book will enable all programmers to understand the concepts involved and to develop their skills in writing high quality programs within the desktop environment.

Contents

Wimp Programming for All derives from the highly popular series of articles originally published in volume 3 of RISC User magazine and written by Lee Calcraft. This has been extensively revised with substantial additional material, all brought up to date for RISC OS 3.

To support the book there is a disc containing all the programs (at different stages of development) as listed within the book, together with additional supporting applications.

The book consists of ten main chapters and a number of appendices:

- Chapter 1: Introducing the Wimp
- Chapter 2: Windows
- Chapter 3: The Wimp Poll Loop
- Chapter 4: Error Handling
- Chapter 5: Icons
- Chapter 6: Menus
- Chapter 7: Redrawing Windows
- Chapter 8: The Wimp Message System, Loading and Saving Data
- Chapter 9: Templates
- Chapter 10: Printer Drivers and Outline Fonts

Various appendices cover **Indirection Operators, Application Resources, Sprite Areas** and other useful information.

Special offer for RISC User subscribers: Buy the book and disc together for just £14.95 (code BK11)

Code		
BK12	Wimp Programming for All (book only)	£12.95
BK13	Wimp Programming for All disc	£ 4.95
BK11	Wimp Programming for All book & disc	£14.95

Please add £2 p&p in each case except BK13 £1 p&p

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DESIGN A CHRISTMAS CARD FOR ACORN

Acorn Computers is inviting all budding artists and would-be designers to enter a competition to design its 1994 Christmas card. The winning entry will be professionally printed and used worldwide by member companies of the Acorn Computer Group this coming Christmas. The winner will receive the hottest product in the Acorn line-up - a Risc PC!

The theme for the competition is *A World of Opportunities*. All entries must be original work and should be produced using an Acorn computer. Designs should be submitted both in *Draw* format and as an A4 hard copy. Entries MUST arrive no later than 10th October 1994. The winner will be presented with a Risc PC 600 2M HD210 at Acorn World '94, which takes place at Wembley from October 28th - 30th. Entries should be sent to:

Acorn Christmas Card Competition
Corporate Affairs Department
Acorn House
Vision Park, Histon
Cambridge CB4 4AE
Tel. 0223 254254

The full competition rules can be obtained from the same address.

ANGLIA SIGNS DEAL WITH ENCYCLOPAEDIA BRITANNICA

Anglia TV has signed a major marketing and distribution deal with the international US publishing group Encyclopaedia Britannica. The initial agreement, which could be worth around half a million dollars to Anglia over the next five years, involves Encyclopaedia Britannica handling the worldwide distribution of Anglia's new CD-ROM, *Understanding the Body*. Jim Decker-Ward, executive vice president of Encyclopaedia Britannica said, "we are delighted to be carrying such a fine product as *Understanding the Body*. It adds another excellent title to our educational product line". More information from Anglia TV, Anglia House, Norwich NR1 3JG, tel. 0603 615151.

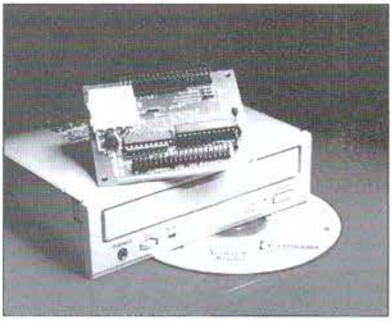
TRAINING COURSES ON THE HORIZON

This autumn Horizon IT Education Services is offering a unique series of exclusive weekend training courses on popular Acorn packages at Rumwall Manor, a luxurious country house hotel just outside Taunton in Somerset. The courses will be hosted by respected people from the Acorn world including the artist Don Slaven, and will cover programs such as Impression Style and Publisher, Artworks and Prophet Accounts. The courses are endorsed by both Computer Concepts and Apricote Studios and will make use of the latest equipment and peripherals. Each course costs £250 inc. VAT per person, and includes all tuition, meals and accommodation. A special rate of £85 is available for an accompanying non-participant.

Course Dates:	Acorns for Beginners	23/9 - 25/9,	11/11 - 13/11
	Impression for Beginners	30/9 - 2/10,	18/11 - 20/11
	Advanced Impression DTP	7/10 - 9/10,	25/11 - 27-11
	ArtWorks Technique	4/11 - 6/11,	9/12 - 11/12
	Acorn's Business Machine	14/10 - 16/10,	2/12 - 4/12

For more details contact Horizon IT, 4 Dray Road, Higher Odcombe, Yeovil, Somerset BA22 8UF, tel. 0935 862990.

CUMANA LAUNCHES NEW CD-ROM SYSTEMS



Cumana has launched several new CD-ROM drives recently. Risc PC users can now transform their systems into fully functional multimedia machines by installing Cumana's latest 300iA CD-ROM drive which incorporates audio-mixing features. Priced at £249 ex. VAT and delivery, the new drive provides clear, high quality sound output via external speakers or headphones through an in-built audio mixer, which combines sound from the CD-ROM with that of the computer. The IDE-based drive, which is a double-speed multisession PhotoCD compatible unit, fits neatly into the Risc PC's standard 5.25" bay, and is accompanied by Clares' *ProArtisan 2CD* and Cumana's own *Photo Album* comprising 82 high quality images.

Cumana has also been appointed as an educational distributor for Pioneer's powerful range of autochanger CD-ROM drives. Three new Pioneer drives now form part of Cumana's Victor range. They include the DRM-602X double-speed and DRM-604X quad-speed six-disc drives, which are also sold by Computer Concepts, and the top-of-the-range DRM-1804X quad-speed CD-ROM autochanger, accommodating up to 18 CD-ROMs in its three magazines. Commenting on the appointment, Mark Brierley, Business Development Manager for Pioneer Great Britain said, "Pioneer selected Cumana as one of its key educational distributors on account of both its technical expertise within the CD-ROM market and the high level of support Cumana offers to education". For further information and prices contact Cumana at Pines Trading Estate, Broad Street, Guildford, Surrey GU3 3BH, tel. 0483 451371, fax 0483 451371.

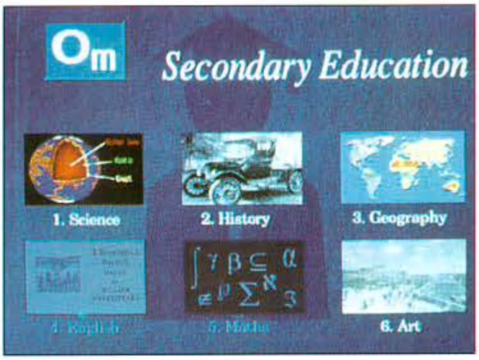
MAKE THE RIGHT CONNECTIONS WITH OakPCB II

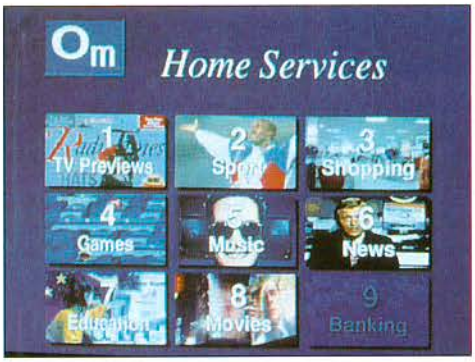
Having enjoyed considerable success as both a stand-alone application and as part of Oak Solutions' Design Processor package, *OakPCB* has recently undergone its first major revision, becoming *OakPCB II* in the process. "The changes we have made are as a direct result of user feedback," explains Vorn Hancock of Oak Solutions. "We've also taken the opportunity to incorporate all the improvements which Acorn have made to the operating system since the launch of RISC OS 3". *OakPCB II* costs £70 ex. VAT and upgrades are available for £35 ex. VAT. For further product information contact Oak Solutions at Dial House, 12 Chapel Street, Halton, Leeds LS15 7RN, tel. 0532 326992, fax 0532 326993.

Interactive Multimedia for All

Alan Wrigley gets excited about Acorn's latest venture, unveiled in our news pages last month

By chance, I'm writing this article while on holiday in my favourite county of Cornwall. A few yards away from me is a prehistoric stone monument, a still-potent symbol of the technology of a long-forgotten culture. In the distance is a reminder of a much later technology - the derelict engine house of a tin mine from the heyday of the industrial revolution. On my lap is a miracle of modern technology - an A4 portable on which I'm typing this article. And in my hand is a press release from Acorn detailing the next great leap forward - interactive multimedia. For those who believe, as many do, that the ancient stone monuments were used by prehistoric civilisations to tap into the global energy of the planet, the wheel has indeed come full circle.





Before I get carried away, let me explain my apparent flight of fancy by saying that I am *very* excited about this new development, which I believe will be more significant for our society than the recent proliferation of computerisation that made it possible. Interactive multimedia will become a truly global and all-encompassing concept embracing everyone everywhere. The prospect is at the same time exciting and frightening; exciting because it opens up possibilities for communication and information exchange that could not have been dreamed of until recently; frightening because every advance in communications technology brings with it the potential for increased centralisation of the provision of information, and manipulation by whatever authorities are currently in control of the process.

IS IT A BIRD...IS IT A PLANE..? NO, IT'S SUPERHIGHWAY

So what exactly is interactive multimedia, and where does Acorn fit into this brave new world? The answer to the first question, according to Acorn's publicity, is a convergence of the entertainment, communications and computing industries; and to the second, Acorn's new offshoot *Online Media* will produce the hardware needed to access the resulting information superhighway, together with software and support for those who wish to provide the multimedia services on which the whole thing depends.

This description of interactive multimedia sounds quite grand enough, but when you start to let your imagination loose on the possibilities, it becomes positively mind-boggling. The basic idea of the concept is that consumers will have a box which sits on or under the television (Acorn calls it a *set-top box* or STB, so we will stick with that for the moment). This will be connected to the telephone or cable line at one end, and the television or other output device at the other, and will have a remote control handset to access the range of services provided.

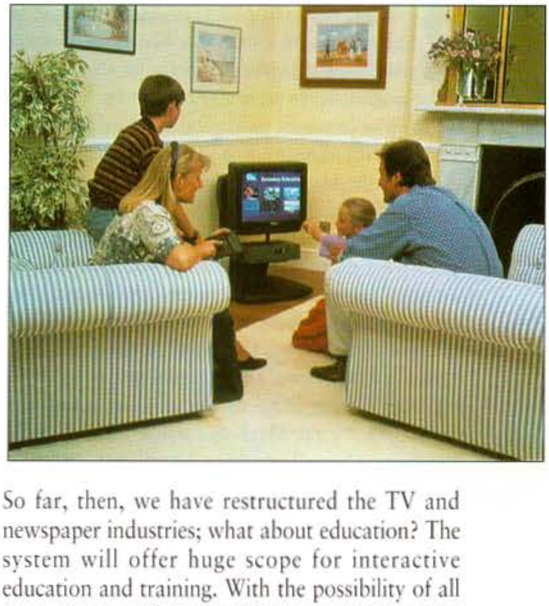
At this point, old hands might be forgiven for recalling with some scepticism the hype that surrounded the launch of Prestel all those years ago; the promise of an information explosion for all - home banking, home shopping, up-to-the-minute news services and so on, all accessible via a terminal which plugged into the telephone line and displayed its output on the television.... The same thought crossed my mind when I first learned about Online Media, but I believe that this time the information explosion will happen, for various reasons that will become clear in this article.

The major difference between now and then is the huge leap in technology which has taken place. Two major advances stand out in particular. Firstly, when Prestel was launched there was no such thing as a personal computer - the nearest equivalent was a Sinclair ZX80. Nowadays we are all quite used to having information shoved at us on VDU screens wherever we go. And secondly, it is now possible to send full-motion broadcast-quality video down a telephone line. Compare this with the 40-column, block graphics Teletext-mode Prestel display and I think you can see why this will be the key to consumer acceptance this time. To be sure, home banking and shopping will be among the services offered, but with a vast difference - our News pages last month gave you a flavour of the service by describing how you might be able to pause a film you are watching to hear about a car for sale, see a video of the car and order a test drive from your front door. Or you could browse through a selection of clothes, ask to see them modelled by someone of your build and colouring, then order on the spot if you like what you see.

But the service which will ensure that interactive multimedia appeals to the mass consumer market is video-on-demand. British Telecom has been talking about this for some time, and sees it as a way to combat the growing threat to its market from cable operators. Video-on-demand means that you will be able to use your STB handset to request a film from a huge selection on offer. The film will then be downloaded to your set in real time for you to watch there and then. For the dedicated couch potato, this means no more trips in the wind and rain to the local video hire shop, only to find the film you want is out of stock. Not only this, but suppose you missed last week's episodes of *Coronation Street* - no problem, just dial up the programs and watch them on demand. This will revolutionise TV viewing and schedules - in fact in the longer term it could mean the end of schedules as we know them.

The same goes for audio. The system will have CD-quality sound, so you would be able to download sample tracks from various CDs to listen to on your own hi-fi. You might even be able to specify your own selection of tracks from multiple sources which would then be compiled onto a single CD for you to buy.

Maybe you like to keep up-to-date with what's going on in the world, either generally or in relation to certain specific interests. An interactive news service will be available, which can be tailored to your own interests. Suppose you are passionate about football and the archaeology of Roman Britain. The system will be able to gather together any news items that relate to these subjects and present them as your own personal electronic newspaper. It could even be configured to learn from what you selected in the past and make intelligent guesses about what you want in the future.



So far, then, we have restructured the TV and newspaper industries; what about education? The system will offer huge scope for interactive education and training. With the possibility of all your educational material being available in the home - the world's reference libraries, lectures on video, multimedia training resources - who would ever need to sit in a draughty and uncomfortable classroom or lecture hall again? In the real world, of course, schools are not going to close since, apart from anything else, the social aspects and legal implications of education are too important. But higher education might be revolutionised, particularly where it is vocational. With the trend in employment being away from the job for life and towards the concept of shorter-term contract work, the onus will fall more and more on the individual to acquire the necessary training - and interactive multimedia is in the right place at the right time.

It goes almost without saying, of course, that access will be available to the global "Infobahn", as it has been called, including the Internet and

Continued on page 15

DA's Picture

Alan Bonsor examines the German entry in the Acorn professional photo-retouching stakes

Retouche, the Atari photo-retouching application upon which DA's Picture is based, has a rather entertaining background. It began life when a friend of the programmer-to-be, bragging about the Macintosh and an image processing package called Digital Darkroom, bet that the effects created with Digital Darkroom couldn't be done on the Atari - in very much the same way that we are inclined to boast about the Risc PC to Amiga and PC owners! Jochen Riekhof, the Atari-owning programmer, took up the challenge and went into seclusion with his computer. Two weeks later he emerged with the core of an image processing application that in 1987 went on sale as Retouche. Many versions and several thousand sales later, Retouche Professional today forms part of an Atari publishing package called the Dream Team, selling at a steep £299 for the black and white version and a staggering, as far as Acorn prices are concerned, £499 for the colour version!

Well over a year ago Acorn approached Digital Arts, the German company that grew out of Retouche's success, and gave the company another challenge - write a version of Retouche for RISC OS. It's taken the programmer, Marcus Juergens, a little bit longer than two weeks to create DA's Picture - fourteen months to be precise - but he's done it. Considering that fourteen months ago he had never written a single thing for RISC OS we'll forgive him the extra thirteen and a half months!

DA's Picture has arrived on the scene at the same time as Spacetech's Photodesk. Digital Arts is a company with years of experience in professional photo-retouching on PCs, Ataris and Next computers. Spacetech is well known for its weather satellite systems for Acorn computers. DA's Picture is a port of an image processing application that has been used successfully in the professional market for several years. Photodesk is a native RISC OS application, untried and untested in the professional field, and in its very first incarnation.

If anyone had said to me before I'd seen either of these applications, "Well it's obvious that DA's Picture is going to be the more powerful and professional of the two," I'd have been inclined to agree with them. Now that I've actually used both programs side by side for over a month, I'd respond differently.

DA's Picture and Photodesk perform very similar functions. They are both 'studio quality' image processing and photo-retouching applications, supporting 24 and 32-bit true colour images. They import and export a variety of image formats, including TIFF, JPEG, PhotoCD and all the Acorn Sprite formats. Both use virtual memory so that, for example, several 20Mb scanned images can be edited at the same time. And they both provide extensive masking and cloning facilities.

In the conclusion to the Photodesk review last month, I wrote: "Photodesk is the first graphics application that I have really enjoyed using on an Acorn computer. It's fast, incredibly flexible and has a highly intuitive user interface that makes it accessible to anyone."

DA's Picture is fast - slightly faster in fact than Photodesk at memory management. It's flexible as well, though not to the same extraordinary extent as Photodesk, which allows any operation to be performed with any tool. But a highly intuitive user interface? Unfortunately not!

THE USER INTERFACE

I believe, and I'm sure that many of you will agree, that RISC OS is one of the finest operating systems around. When you purchase any application that follows Acorn's RISC OS guidelines, you should be able to use the program and access the majority of its facilities without once having to refer to its manual. Photodesk, Impression, DataPower and ProArtisan 24 are just a few excellent examples of this.

DA's Picture's programmer has in his wisdom decided not to follow the guidelines. Its user interface is based on the original version and it demonstrates quite clearly the programmer's unfamiliarity with RISC OS. Not one of DA's Picture's dialogue boxes uses icons and buttons correctly. This is not to say that the manner in which they are used doesn't work, but it does make their functions more difficult to understand. In the save boxes for example, no matter whether you're saving a TIFF, JPEG or Targa file, it always displays a Sprite icon - inexcusable as there are standard icons for all these filetypes. I raised this point with Ray Cross of CGS ComputerBild, Digital Arts UK distributors, and he guaranteed that this would be fixed immediately, now that the programmer actually knows that there are standard icons. It is also not always clear where you're supposed to click a mouse button to perform an action or open a menu, and depending on what tools are currently selected, the right Shift, Ctrl, left Shift and Alt keys all perform different functions when used in various combinations with each other and the mouse buttons.

Neither DA's Picture nor Photodesk support Acorn's interactive Help application. With Photodesk this isn't really a problem as it provides explanatory messages in its tool bar. DA's Picture would be considerably easier to learn and use if it supported the Help application.

DA's Picture is missing some basic but important features. I wanted to create a 15cm by 10cm image to fit inside an Impression frame. Unfortunately DA's Picture only works in pixels.

On the positive side, DA's Picture does have a very useful feature lacking in Photodesk. When you quit DA's Picture, all settings, such as window positions, selected tools, etc., are saved. Thus when you reload it, you can continue exactly where you left off.

THE HEART OF THE MATTER

Work your way through the unfamiliar exterior and you will, after quite a steep learning experience, find that DA's Picture can do almost everything that Photodesk can do. DA's Picture does not currently support textures and effects, and has no text facilities, but these are supposedly being written as extension modules which should be available at the Acorn World Show in October. Ray told me that the effects module will provide similar functionality to Kai Power Tools, an add-on module for Photoshop on the Macintosh.

IMAGE PROCESSING

DA's Picture provides 13 image processing functions, each of which can have a strength from 0 to 100% in 1% steps. This does not compare favourably to Photodesk's 34 or so, and you can't apply the effects with the various painting tools either. DA's Picture follows the more traditional approach of using a 'frame block' which you drag over the area you wish to apply the effect to and then click on the function you wish to apply. The area contained by the frame block can include a mask or part of one, in which case the area masked out will not be affected by the image processing. Thus using a combination of the frame block and mask, any irregular shape can have image processing functions applied to it. Although this is more complicated than Photodesk's system, once you've got the hang of it, it is reasonably fast and easy to use.

CLONING

DA's Picture's cloning facility is excellent. Once you've selected a point from which to start the clone, a square outline on the image being cloned follows the mouse movements precisely, giving you a very useful visual indicator of which part of the image you are actually cloning. With Photodesk cloning can be a bit of a hit-and-miss exercise.

MASKING

The masking facilities in DA's Picture are possibly more powerful than those in Photodesk, although I did find them more difficult to use. Like Photodesk, DA's Picture allows you to create a mask with any tool, be it an airbrush or the magic wand. Unlike Photodesk however, a mask in DA's Picture can be created, edited and manipulated as if it were an image in its own right. A mask can be created by cloning an image - see the example sequence - and any of the image processing functions can be applied to it, including Clear, Invert, Noise, Grey Noise, Blur, Sharpen, Contour, Erode, Laplace, Edges, Relief, Vibrate, Hipass and HPRing. I do wonder whether anyone will really need to apply edge detection to a mask.

THE NAVIGATION BOX

Unique to DA's Picture is the navigation box. This little box, which forms the bottom half of the Imagelist window, consists of a thumbnail of the image being edited and a dotted outline that encloses the visible part of the image. Dragging the dotted outline around allows you to access any part of the image very quickly without having to resort to the horizontal and vertical scroll bars on the window itself. This is very useful when working with large images that spend much of their lives in the virtual memory, as trying to find part of an image with the scroll bars can be very tedious as the application loads and stores sections of the image. It's even more of a time saver when you discover that either of the scroll bars are covered by other windows and dialogue boxes.

IMPORTING AND EXPORTING

DA's Picture has the edge on image importing and exporting, especially when it comes to the TIFF format. Photodesk only allows you to save uncompressed TIFF files and doesn't allow you to save mask information at all - a very serious omission. (How is one supposed to write a review when new versions of the programs keep arriving on one's desk? This morning Photodesk V1.12 popped through the letter box. It now has full support for saving and loading masks!) DA's Picture on the other hand supports TIFF LZW compression, the saving of images in either RGB or CMYK format, the saving of halftones and masks, and both Motorola (Macintosh and Acorn) and Intel (PC) TIFF formats. DA's Picture also imports Targa files, while Photodesk can handle Acorn Clear files. As for loading and saving speeds, both programs perform almost identically - on the Risc PC a 7Mb Sprite file

PRODUCT INFO

Product	*DA's Picture*
Supplier	*CGS ComputerBild* *231 Northborough Road* *Norbury* *London SW16 4TU* *Tel. 081 679 7307* *Fax 081 764 7898*
Price	*£99.00 ex. VAT and p&p*

This sequence of 6 images demonstrates one of DA's Picture's best features: the ability to perform the same image processing and manipulation on a mask that you can do on the image itself.

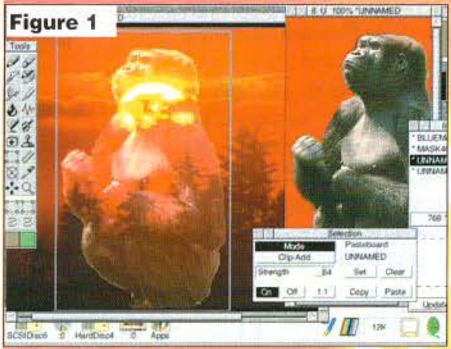


Figure 1

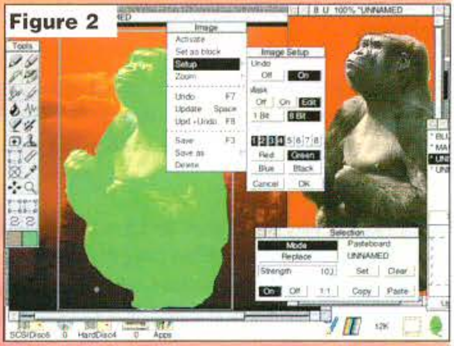


Figure 2

In figure 1, a mask (the red area) has been created by first masking out the gorilla - the gorilla is a fairly solid object that masks well with the magic wand - and then inverting the mask using the Invert option on the Filter menu. A rectangular area containing the gorilla and part of the mask (the right-hand image) was copied onto the clipboard (known as the Pasteboard in DA's Picture) using the Selection dialogue box. A block frame (a rectangle which constrains all image processing to the area inside the frame) was then created on the left-hand image containing the sunset, and forced to the size of the image in the clipboard by clicking on the 1:1 button in the Selection window. The gorilla in the clipboard was then pasted into the block frame using the Clip-Add paste mode and a strength of 84%. (Clip-Add is one of several pasting modes available including Replace, Subtract, Multiply, etc.)

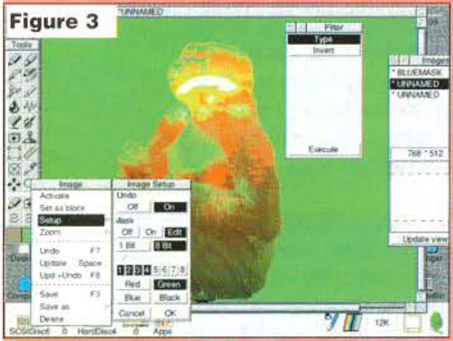


Figure 3

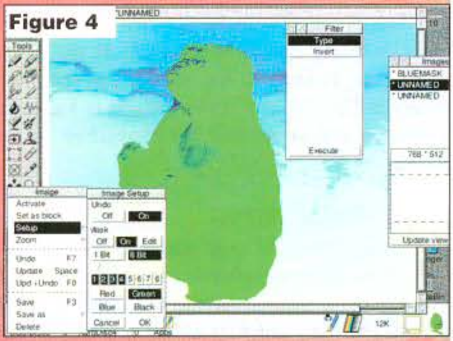


Figure 4

In figure 2, mask editing was turned on in the Image Setup window and the gorilla was again pasted into the block frame, in the same position, but this time using the Replace paste mode at 100%. This had the effect of creating a mask identical to the gorilla, and covering the pasted gorilla perfectly, thus allowing both the gorilla and the surrounding sunset to be edited independently.

Figures 3 and 4 demonstrate the difference between editing a mask and editing the image itself. In figure 3, with mask editing turned on, the mask itself has been inverted via the Filter dialogue box. In figure 4, with mask editing turned off but the mask still active, the area surrounding the mask has been inverted using the Invert option.

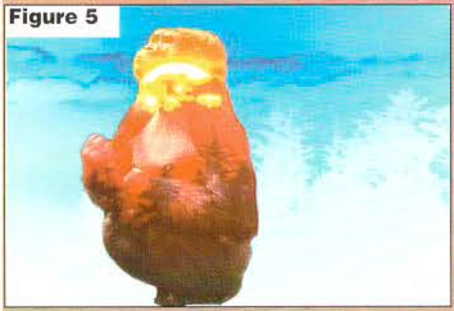


Figure 5

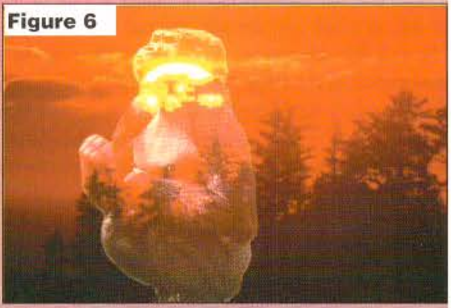


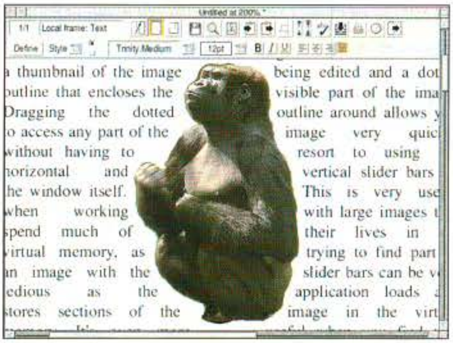
Figure 6

Figures 5 and 6: "King of the jungle" and "Gorilla on the moon" took 64 seconds to load into DA's Picture and 59 seconds to load into Photodesk.

SYSTEM REQUIREMENTS

As with Photodesk, you will need a reasonably powerful system to get the most out of DA's Picture. Unlike Photodesk, DA's Picture does not allow you to adjust the amount of memory it uses dynamically. You can tell it how much RAM and virtual memory you want it to use, and it won't take any more than this, but it won't release any either. While Photodesk allows you to adjust its memory allocation in the Task Manager, forcing it to cache more or less of the image on the hard drive and thus freeing computer RAM for other temporary purposes, once DA's Picture has taken the memory, you can't get it back except by quitting the application.

These are the two images with which the various effects and examples were created. They are supplied as part of the Risc PC's 'images' collection.



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This gorilla wasn't cut out from the original image. The image was simply saved with the mask as a 32-bit Sprite file and loaded directly into Impression Publisher.

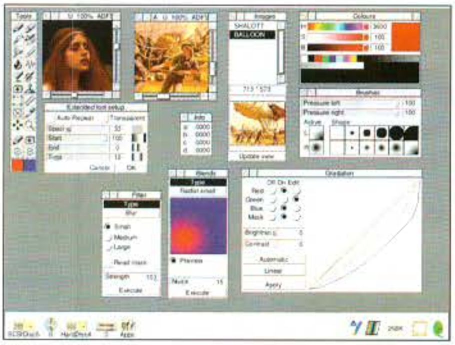
DA's Picture works best on a Risc PC. You will be able to run it on a souped-up Archimedes, but as with Photodesk, your Arc will need at least the following: RISC OS 3.1, a 40Mb hard drive, 4Mb memory, an ARM3 processor and, if you want to appreciate its colour-capabilities, a 16-bit colour card and a high resolution colour monitor.

CONCLUSION

I suppose you're expecting me to tell you which application is the better of the two - Photodesk or DA's Picture? Both applications do very much the same thing. They just do what they do in different ways. At £99, DA's Picture is £70 cheaper than Photodesk's £169, but then DA's Picture is currently lacking three facilities provided by Photodesk: textures, effects and text support. These should become available as extension modules later this year for about £20 per module. If you want these facilities, you'll end up paying the same for either package.

In certain areas, such as the user interface, flexibility and features, DA's Picture is miles behind Photodesk. In others, such as masking and cloning, it's only slightly better.

I expect all new software to exhibit some unstable tendencies. The version of Photodesk that I used for the review did crash once in a while. The new version hasn't, yet. DA's Picture V1.00 has crashed just a bit too often for my liking. Hopefully this little bug will be sorted out very soon.



Most of DA's Picture's windows and dialogue boxes. From left to right, top to bottom: the 24 icon toolbar; two image windows; the image list and navigation window; the HSB colour selector; the tool setup window; an information display; the brushes window; the filter window; the blends window; and the gradation window.

Personally? I prefer Photodesk.

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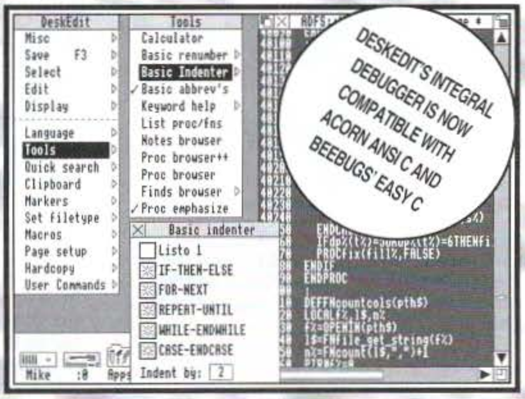

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Interactive Multimedia
Continued from page 9

any other information sources normally available with a phone line and modem. Also available will be games, including multi-user games whose scope will naturally be vastly greater than anything you've ever played over your modem before.

Further into the future, video conferencing and video telephony will be available, so with an STB there will be no need for a dedicated and expensive videophone. Communication with your home from elsewhere will also be possible; so if you've just touched down in the Bahamas and realise the central heating is still on, don't worry - you just phone your STB and ask it politely to switch it off. Or you may be sitting in your office at work, watching last Monday's *Eastenders* on your Risc PC, when the program is interrupted to tell you that someone is at your front door at home, and moreover you can see who it is via the video camera over the door. You could then speak directly to the caller via an audio link before returning to your programme.

Further still into the future, imagine being able to pull on a virtual reality headset and visit your relatives in Australia, stroll around their new home, share a drink with them, even enjoy the flight on the way there ... as I said at the beginning, the possibilities are truly mind-boggling. And when you remember that most of today's computer applications would have seemed like science fiction in the early days of computing, what scope must there be in the future for interactive multimedia once our imagination has got to work?

TAKE YOUR PARTNERS

Sensibly, Acorn has recognised that the stakes in such a venture are far too high for a small company, and it has therefore been busy wooing partners who have the necessary expertise to complement its own. Olivetti is heavily involved, perhaps seeing this as the first real chance to make serious money from its investment in Acorn. ARM is a partner too, not surprisingly since the STB is based on ARM technology. The communications technology expertise is provided by Advanced Telecommunications Modules Ltd (ATML). For the initial system trial, which will take place later this year in Cambridge, Acorn has enlisted Cambridge Cable (a subsidiary of Singapore Telecom) who will supply the service to a selected group of its customers, and Anglia Television who will provide program resources such as news, current affairs and educational material. Other partners include BNR (a subsidiary of the American giant Northern Telecom), Oracle and News International. Further trials will take place later in association with other major international telecoms companies.

LITTLE BOXES

The STB, as I mentioned just now, is based around an ARM chip - to be precise the same ARM 610 that controls the Risc PC. The family resemblance is further enhanced by the presence of the VIDC20 to provide the video output. The similarity stops here, however, as the STB sports an MPEG decoder operating at 1.5 Mbits/sec, 16-bit sound, a high-speed comms interface and controlling software that provides the kind of effects needed from a professional multimedia system, such as fades and dissolves. Optional extras will include an internal CD drive, serial and parallel ports (for modem, printer etc.), and provision for alternative input devices to replace the remote control handset, such as keyboards, mice, devices for disabled users etc.

Much thought has been given to connectivity, recognising the fact that many different communication protocols exist. The STB has been designed to work with a large number of protocols, the idea being that whatever method is used to transfer the data, the process should be completely hidden from the user. ATML's input to the set-top box design is a module which provides an Asynchronous Transfer Mode (ATM) comms protocol. ATM has been designed as a low-cost approach to the transmission of digital data, such as video, and will in the future be based on ARM technology.

IT'S HYPE JIM, BUT NOT AS WE KNOW IT

I've stuck my neck out a long way in this article, and perhaps my excitement is premature - only time will tell. But one thing is certain: whether it happens in one year, or five or ten, whether Acorn becomes a market leader or is remembered only as a gallant sacrificial pioneer, interactive multimedia *will* change the world, and most of us will be around to see it. It may be no coincidence that Online Media's corporate logo is simply its initials "OM" - the Hindu mantra which is an expression of universal energy. Perhaps in our 20th-century materialistic way we are about to discover our own version of the global network that ancient civilisations knew in a wholly different sense.

Hands-on Multimedia: Editing Movies on the Desktop

In the first part of a new short series on Multimedia, Lee Calcraft puts Uniqueway's powerful Empire package through its paces.

Uniqueway, based in Cardiff, have long been associated with Acorn's efforts on the desktop movie front, and as well as writing the most recent version of ARPlayer, found in Acorn's Replay suite, have also been responsible for creating the vast majority of professional Replay movie clips currently available within the Acorn world.

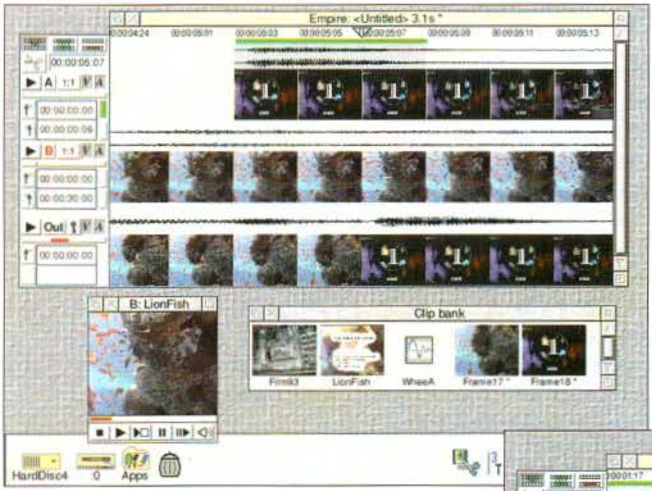


Figure 1. Empire's three main windows: the Timeline, the Clip Bank and the Preview.

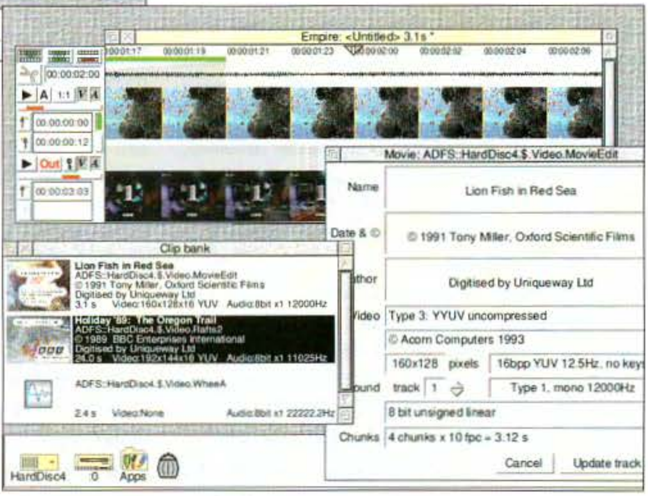
Their Replay editing package, *Empire*, grew naturally out of this involvement, and is about to be re-released with a number of enhancements. Essentially, Empire emulates a professional video editing suite, providing three main windows on the desktop: the Clip Bank, where resources can be held, the Preview window for viewing movie segments, and the *Timeline* window, on which actual editing takes place. Exactly which windows appear when you install Empire, can be set up by the user, but by default all three appear in a cluster.

THE CLIP BANK

In a typical editing session, you might begin by dragging one or more resources to the Clip Bank. Although these could well be ARmovie files or ViA files from Irlam Instruments' *Replay DIY*, they might equally well be individual sprite files, Draw files, or a whole variety of different sound file types, all of which can be edited into your movie in one way or another.

One of the menu options on the Clip Bank window offers a full info display with each icon. This is extremely useful, and in the case of movie clips it gives essential information such as the length of the clip, the pixel size and the type of soundtrack. Another handy option lets you save a list of the Clip Bank items, which can be dropped on the Clip Bank window for instant loading at future sessions.

To use a movie file stored on the Clip Bank, you simply drag it to the Timeline window, whereupon it is exploded into its component frames, and displayed together with the accompanying sound waveform(s). The individual timecode of each frame appears immediately above it, and you can scroll through the sequence by dragging the film with a hand-shaped pointer. If you hold down the Ctrl key, the rate at which the movie shuttles past speeds up by a factor of five.


Empire: <Untitled> 3.1s *
Clip bank
Movie: ADFS::HardDisc4.$.Video.MovieEdit
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HardDisc4
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© 1991 Tony Miller, Oxford Scientific Films
Digitised by Uniqueway Ltd
3.1 s Video:160x128x16 YUV Audio:8bit x1 12000Hz

Holiday '89: The Oregon Trail
ADFS::HardDisc4.$.Video.Rafts2
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Digitised by Uniqueway Ltd
24.0 s Video:192x144x16 YUV Audio:8bit x1 11025Hz

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Name: Lion Fish in Red Sea
Date & ©: © 1991 Tony Miller, Oxford Scientific Films
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© Acorn Computers 1993
160x128 pixels 16bpp YUV 12.5Hz, no key
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Chunks: 4 chunks x 10 fpc = 3.12 s

Figure 2. Extended information options

A set of controls on the Timeline's tool bar allows you to apply edit-start and end markers to a movie sequence, alter the playback speed, and select the type of edit required (insert, overwrite or delete). A Play button allows you to selectively play the marked section.

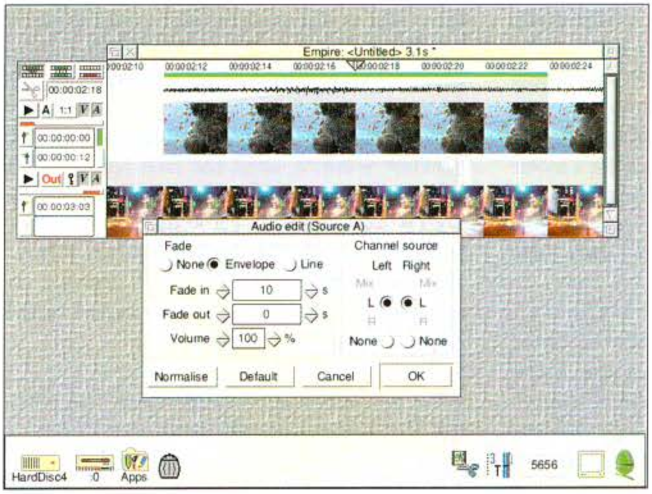


Figure 3.
Editing the sound envelope of a clip

EDITING IN EARNEST

To show how all this works in practice, I constructed a short movie sequence using small sections of two other Replay movies. I began by dragging the two source movies to the Clip Bank, and from there I dragged them to input channels A and B of the Timeline window. I then marked a section of the first movie which would be used for the first part of the output movie. There are two ways to do this. You can either simply use the hand icon to drag the sequence of frames until the required frame coincides with the editing mark on the window, or you can use the Preview window to do the job for you.

By Clicking on the Play button in the Preview window you start playing the selected clip. Pressing the Stop button halts the movie with the current frame automatically lined up against the editing marker in the Timeline window. All you need to do then is to press the *Start* or *End* marker buttons, to mark the segment. This method is very accurate, allowing you to make cuts with single-frame precision; and the scrolling audio display makes it very easy to coincide an edit with changes in the soundtrack, such as the end of a musical note or whatever.

Once you have marked the start and end of an edit, you simply click on the scissors icon, and the edit takes place. If you are in *Insert* mode, the marked sequence is inserted into the output movie, which automatically appears in the bottom part of the Timeline window, all ready for checking in the Preview window, or saving to disc.

EDIT DECISION LISTS

Another cunning thing about Empire is that it keeps track of all editing, and as well as providing a useful Undo option which lets you progressively undo a whole sequence of edits by repeated pressing on F8, it even lets you save a so-called *Edit Decision List* (or EDL for short). This is saved as a text file, and can be dropped on the Timeline window at any point to completely reproduce a whole series of edits. This same file can also be used by professional video editing equipment to repeat exactly the same set of edits on video master tapes - though before the Archimedes or Risc PC can be used for professional editing in this way, Acorn will need to incorporate a means of automatically recording timecodes from master tapes into Replay sequences, as Apple have done with their QuickTime movie format.

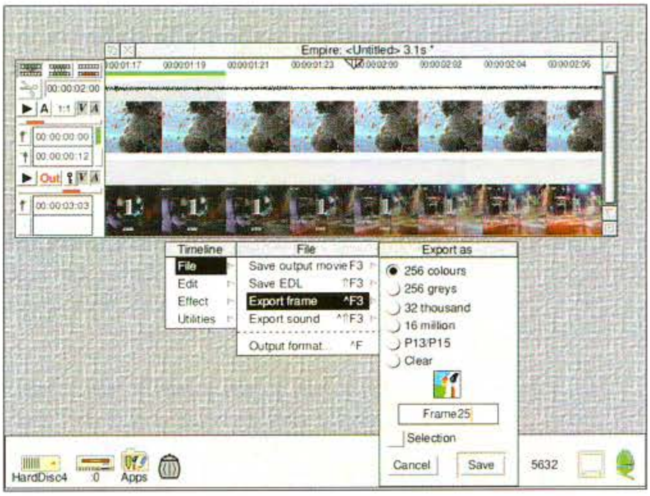


Figure 4.
Frame export modes

EDITING THE SOUNDTRACK

Empire's Timeline window simultaneously displays sequences of individual frames and their accompanying soundtrack, and for editing purposes it allows you to work with a combined movie and sound sequence, or with either video or sound alone. This is achieved simply by selecting the appropriate icons on the Timeline toolbox.

External sound sources in raw data, Armadaeus, Wave or AIFF formats can also be incorporated into any soundtrack. To do this, you simply drag your sound file to the Clip Bank, then place it on the Timeline window. Double-clicking on it will play it in a manner analagous to playing a movie sequence; and to edit it into your movie, you just mark the sound "frames" that you want to use, and click on the Edit button, with Audio only selected on the Output channel.

Another useful feature lets you control the sound envelope to effect fade-ins and fade-outs. If you double-click over the sound waveform display on the Timeline window, the Audio edit dialogue box appears, allowing you to select parameters for the envelope, including the duration of the fade. You cannot test the effect of this proposed edit until you have actioned it by clicking on the Edit button, but if you don't like what you have done, you can just hit F8 (Undo) and try again.

DISSOLVES AND CROSS FADES

When you edit a movie sequence in any way, whether by adding or removing frames, the join will inevitably be abrupt, both from a sound and visual point of view. And while Empire can fade the soundtrack in or out at will, there is no similar facility for a visual dissolve.

However, you can do this manually. First shuttle the movie in the Timeline window until the "join" is at the edit point, and save the frame either side of the join as a sprite (ideally a 16-bit sprite if you have the hardware, but 8-bit if not). You now need to create a sequence of sprites which take you smoothly between the two. One easy way to do this is to drop them into Rephorm, and allow this package to morph between the two images, so creating a sequence of sprites which can be dropped back onto the Clip Bank window, and inserted into the movie at the join.

Unfortunately, Empire only allows you to insert sprites one at a time from the Clip Bank, so a lengthy dissolve can be a bit fiddly to achieve. But this is where Uniqueway's *EMConvert* utility (which is sold separately) comes into its own. This automates the process of converting a sequence of sprites or other image files into an ARMovie file. The complete dissolve can then be edited in from Empire's Clip Bank as a single object.

TITLING

One of the new features of Empire is its ability to use Draw files for captioning. To put up a caption on a particular movie sequence, you first create the caption in the required colour using Draw. You then shuttle the output movie in the Preview window until the first frame to be captioned is on view, and select the *Annotate* option from the Preview window menu. The Draw file may then be dragged from the Filer to the Preview window. The caption is automatically scaled, and can be moved to the required position by dragging.

When you are happy with the effect, you select the *Use* option and the captioned frame is copied to the Timeline input window A, from where the caption can be applied to the required sequence of frames. On the beta test version which I am using, this feature was not working properly so I was unable to test it fully. But this should be fixed in time for the release, and Uniqueway intend to further enhance this feature so that in future releases it may be possible to animate the caption by using Draw interactively to effectively apply a sequence of Draw images.

PRODUCT INFO

Empire costs £99 ex. VAT, and EMConvert is £25 ex. VAT. Uniqueway can be contacted on 0222 644611.

It would be nice too if some simple dissolves could be included from within the package. But this is some way down the wish list, I believe. In the meantime, this is already an extremely powerful package, and ideal for experimenting with video editing on the desktop, or if you are lucky enough to have a Replay-compatible video grabbing board such as Irlam's Replay DIY or CC's Eagle M2, you can really put it to work in earnest.

Next month in this slot we will take a look at using the Eagle M2 multimedia package and Uniqueway's EMConvert.

HARDWARE AND SOFTWARE EXPANSION FOR ACORN COMPUTERS

DUAL RS423 SERIAL INTERFACE - two additional RS423 serial interfaces for communicating with RS423 or RS232 devices eg modems (in order to use bulletin boards), printers, plotters, instruments, etc. Up to four cards can be fitted in a computer.

IEEE488 INTERFACE - enables up to 14 test and measurement instruments, from well known manufacturers such as Hewlett-Packard, Fluke, Philips, Tektronix, etc. to be connected to the computer. For example, voltmeters, oscilloscopes, spectrum analysers, function generators, counters, logic analysers, programmable power supplies, plotters, printers, etc.

16 BIT PARALLEL I/O - provides two separate 16 bit input/output ports. Other facilities include four 16 bit counter/timers, two 8 bit shift registers and eight interrupt inputs. Applications range from measurement and control to high speed data input and output.

12 BIT ADC - provides eight single ended inputs each with an input voltage range of -5 to +5 Volts. Up to 166,000 samples per second can be taken.

STEbus INTERFACE - overcomes the limitation of a maximum of four expansion cards in a computer by enabling the use of industry standard STEbus boards in an external input/output sub-system for measurement and control applications.

Intelligent Interfaces Ltd
P O Box 80
Eastleigh
Hants
SO5 5YX
Tel: 0703 261514 Fax: 0703 267904

SCSI DEVICES - internal and external hard disc drives, magneto-optical removable disc drives, tape streamers etc.

FORTRAN 77 COMPILER - completely compatible with the now discontinued Acornsoft compiler.

GINO-F 3D, GINOGRAF, GINOSURF and HERSHEY+ - the FORTRAN subroutine graphics libraries.

Intelligent Interfaces are Bradly Associates distributor for GINO-F 3D, GINOGRAF, GINOSURF for Acorn RISC OS-based Computers.

TERMULATOR - enables a computer to emulate a terminal from the VT range (VT52, VT102 or VT220) or a Tektronix 4010 graphics terminal.

Termulator a trade mark of Acorn Computers Limited is applied to this product under licence from Acorn Computers Limited.

COMPLETE SYSTEMS - configured to customer's requirements by fitting RAM upgrades, hard discs, expansion cards, etc.

ADVICE - SUPPLY - SUPPORT - Intelligent Interfaces were established in 1981 and have enjoyed a long relationship with Acorn Computers. This places them in an ideal position to advise on, supply and support systems purchased from them.

INTELLIGENT INTERFACES

Experimenting with Colour on the Risc PC

by Lee Calcraft

Although the good old Archimedes could only handle a maximum of 256 colours on screen at once, you could actually create pretty impressive graphics with it, by careful choice of colours, or by dithering to create the required effect. But one of the most restricting features of the 256-colour modes was the cumbersome way in which colours were defined. Working out the correct colour number and the amount of tint was far from intuitive.

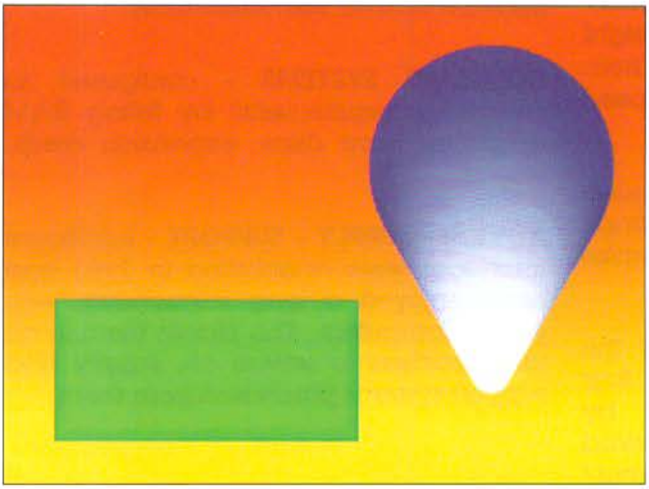


Figure 1. Lozenge and washed cone against a yellow-red wash backdrop

One of the many blissful things about the Risc PC is that RISC OS 3.5 allows you to specify colours in a far more natural way as true combinations of red green and blue. Thus the command to set a foreground text colour is simply:

```
COLOUR r,g,b
```

where r, g and b are integers between 0 and 255. The same is true for setting the graphics foreground colour:

```
GCOL r,g,b
```

Thus the three line program:

```
MODE "X800,Y600,C32K,EX1,EY1"
GCOL 255,0,0
RECTANGLE FILL 400,400,300,100
```

will put you in a 32,000-colour mode, and draw a red rectangle.

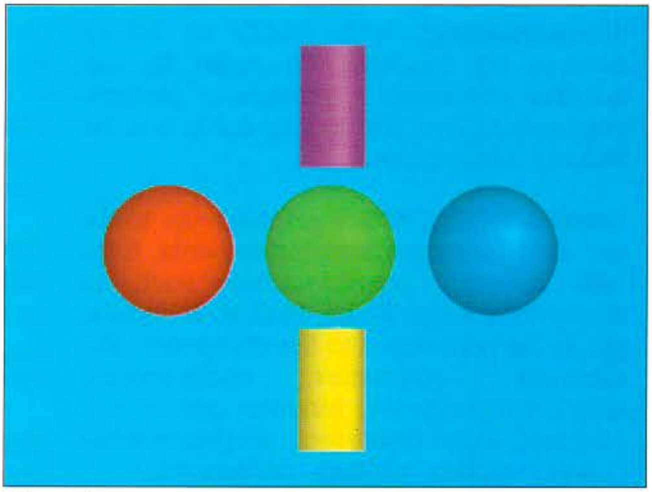


Figure 2. Highlighted spheres and cylinders

Setting the background colour for graphics is achieved by preceding the three colour values with the number 128. Thus to clear the screen to a medium blue, you could use something like the following:

```
GCOL 128,0,100,200:CLG
```

or for black:

```
GCOL 128,0,0,0:CLG
```

And as a quite unexpected bonus, if you use the rgb forms of the GCOL command while in a 256 or even a 16-colour mode, dithering (via ECF patterns) is automatically used in an attempt to recreate the required shade. The same is true of 32,000-colour modes, where the dithering is particularly effective. If you want to avoid dithering in 32,000-colour modes, you should only use colour numbers that are divisible by 8.

COLOUR RUNS

Because it is so easy to describe any desired colour, it is a simple matter to generate colour runs with any given colour gradually fading into any other. For example, the following short program fills the screen with a colour wash which goes from red at the top of the screen through orange to yellow at the bottom. I have used a 32,000-colour mode for this, and there is only barely perceptible banding. Using a 16-million colour mode would probably eliminate it completely - though of course you will need 2Mb of VRAM for that.

```
MODE "X800,Y600,C32K,EX1,EY1"
OFF
Y=1200
step=Y/255
FOR A=0 TO 255
  GCOL 255,A,0
  RECTANGLE FILL 0,Y-A*step,1600,10
NEXT
A=GET
```

GREEN LOZENGE

By using a similar technique, it is possible to create a wide variety of objects with a 3D feel to them. For example, a simple lozenge shape can be created by drawing a series of filled rectangles, each with the same centre, but with decreasing width and height. If you brighten the colour with each step then the object appears to be raised, while the reverse will make it appear to be sunken. For example, the following will create a bright green lozenge.

```
REM Green lozenge
X=100:Y=100
H=200:W=400
FOR A=100 TO 255
  GCOL 0,A,0
  RECTANGLE FILL X+A/4,Y+A/4,W-A/2,H-A/2
NEXT
```

WASHED CIRCLES AND SPHERES

What you can do with rectangles you can also do with circles. The following four lines create a conical shape by progressively reducing the radius and y coordinate of a succession of filled circles at the same time as changing their hue from cyan to blue:

```
FOR A=0 TO 255
  GCOL 0,255-A,255
  CIRCLE FILL 600,800-2*A,300-A
NEXT
```

It is also a simple matter to create a good approximation to a lit sphere by progressively reducing the radius of a filled circle at the same time as slowly moving the centre diagonally upwards, and lightening the colour. The following few lines illustrate the technique, to create a red sphere.

```
REM Red sphere
X=300:Y=500:R=260
FOR A=100 TO 255
  GCOL A,0,0
  CIRCLE FILL X+A/3,Y+A/4,R-A
NEXT
```

If you replace the GCOL line by:

```
GCOL 0,A,0
```

you will get a bright green sphere, while:

```
GCOL 0,2*A/3,A
```

will give a blue one. In this latter case I have added in a component of green (i.e. 2*A/3) to the highlighting to make it more effective.

Highlighted cylinders can be created by a similar approach. To make a vertical cylinder you need to draw a sequence of filled rectangles whose width, but not height, steadily decreases. At the same time just move the horizontal centre slightly to one side, and brighten the fill colour as you do it. Here's an example in red:

```
H=300:W=260
X=300:Y=800
FOR A=100 TO 255
  GCOL A,0,0
  RECTANGLE FILL X+2*A/3,Y,W-A,H
NEXT
```

READING COLOURS

In Archimedes Basic you can read the colour at any point on the screen using the POINT function. For example:

```
colour=POINT(X,Y)
```

will set the variable *colour* to a value representing the colour at screen coordinate X,Y. This can be useful in a graphics program where you want to pick up the colour under the pointer, or in a games program where you want to detect collisions.

This function works in a similar way in the new Risc PC modes. Unfortunately in Acorn's infinite wisdom they have made the function return different ranges of values depending upon whether you are in a 32,000 or a 16-million colour mode. In both cases a single number is returned which contains the red green and blue components of the colour at the point in question. In 32,000-colour modes, the returned values for each colour lie in the range 0-31, while in 16-million colour modes they range from 0-255 - so much for mode independence!

In 32,000-colour modes, the colour components r,g,b at point X,Y can be obtained as follows:

```
p=POINT(X,Y)
r=p AND 31
g=(p>5) AND 31
b=(p>10) AND 31
```

while in the higher colour density mode, you can use:

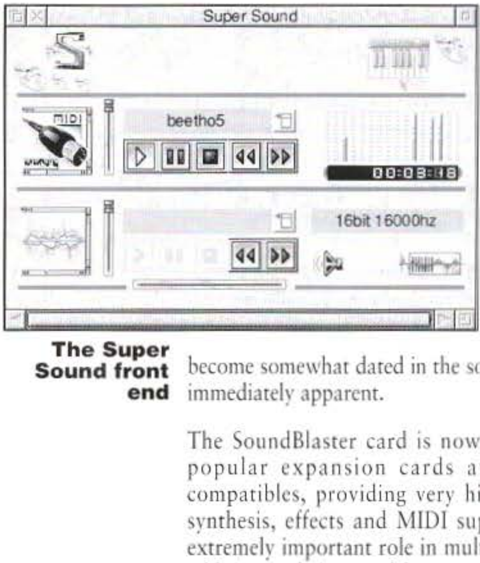
```
p=POINT(X,Y)
r=p AND 255
g=(p>8) AND 255
b=(p>16) AND 255
```

That's about all we have room for I'm afraid - more on the Risc PC next month. Meanwhile, on this month's disc there is a program which incorporates all the examples given here.

The Super Sound Expansion System

Alan Bonsor examines the first of a new breed of sound expansion systems, which turns his computer into a synthesizer

When the BBC micro was born in 1981 it had one of the best sound systems available on any computer of its generation. Compared to computers like the ZX Spectrum, the Beeb provided a symphony of sound effects. With the launch of the Archimedes in 1987, Acorn once again gave us a computer whose sound facilities put many other systems to shame. Seven years on however, the Risc PC sadly offers nothing new as far as sound is concerned. We've still got superb sound compared to even the fastest Pentium-based PCs, but plug an inexpensive SoundBlaster card into that PC and the fact that Acorn computers have become somewhat dated in the sound department is immediately apparent.



The Super Sound front end

The SoundBlaster card is now one of the most popular expansion cards available for PC compatibles, providing very high quality sound synthesis, effects and MIDI support. It plays an extremely important role in multimedia systems in addition to being used by a multitude of games - in fact no PC game is worth its salt if it doesn't offer decent music and sound effects via SoundBlaster.

Several companies have been stepping into the breach to provide similar sound facilities for the Risc PC and Arc, and Lancashire-based Audio Dynamics has won the race to get the first sound card on the market - the Super Sound Expansion System or SSES 1600.

In case you're wondering why it was originally known as the ESP Sound Expansion System, it was developed by Expressive Software Projects' hardware department, which in a company re-structuring earlier this year became an independent company called Audio Dynamics.

FEATURES

Compatible with all Acorn 32-bit computers, the Super Sound Expansion System combines a synthesizer and sample playback facility with a standard MIDI interface. It comprises two hardware components: a single width expansion card and an external input/output unit. The expansion card is based around a custom chip set designed by the American synthesizer manufacturer Ensoniq. Its principal features are shown below.

Technical Jargon:

A 16-bit, 32-voice CD quality wave table synthesizer providing 128 instrument and 49 percussion General MIDI sounds in 4Mb of on-board ROM. These can be played from any Acorn MIDI compatible software or an external MIDI device such as a keyboard.

Technical Jargon:

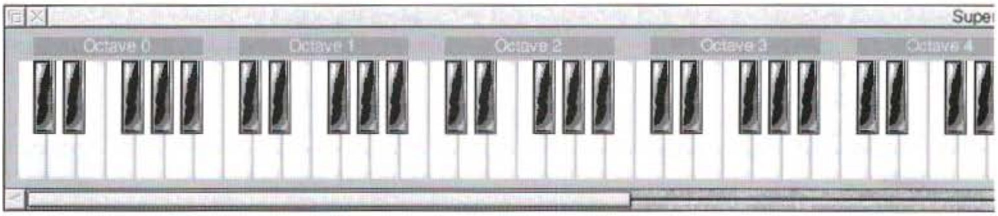
Stereo playback of 8-bit, 8-bit ulaw, 12-bit and 16-bit signed and unsigned samples at frequencies from 1Hz to 60kHz with a 96dB dynamic range.

Technical Jargon:

On-board 68000 processor to ensure minimum ARM sound overhead.

Technical Jargon:

An external 16-channel MIDI interface via three 5 pin DIN sockets (MIDI IN, OUT and THRU), two phono lineout sockets, one 3.5mm jack headphone socket and one standard headphone socket.



A 9-octave keyboard on screen

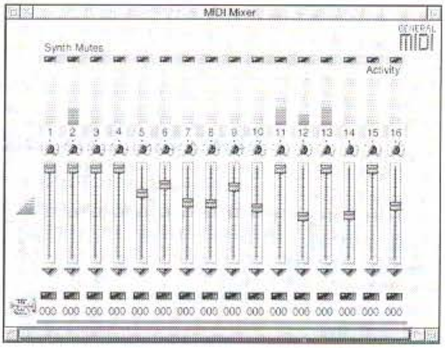
IN USE

As the SSES is 100% Acorn MIDI compatible, it can be used with all MIDI compatible software. This includes Maestro, Clares' Rhapsody 3, ESP's Notate and Compose World and any other MIDI package you may care to mention. Early versions of the software supplied with the system did have some compatibility problems however. The first time I tried to use the SSES with Rhapsody it crashed when I attempted to play a MIDI file, and when I upgraded to a Risc PC several other problems manifested themselves. Audio Dynamics has been extremely helpful in these situations, and in most cases a software update has arrived by return of post.

The SSES is supplied with a program called SuperSound. This little application, with its unusual but attractive front-end, provides direct access to all the General MIDI samples, a MIDI file player, a sample player and a very well implemented nine-octave keyboard. However, I am not very fond of the pop-up menu containing almost 150 General MIDI sample names - finding the one that you want can be very tedious and there is also a non-fatal bug in the software that causes the icon bar menu to appear whenever you click adjust in the sample list menu.

Dragging a MIDI file (type 0 or 1) or one of your own sound samples into the SuperSound window will cause that file to be played, either from RAM or directly from disc if memory is tight. Playback volume and speed can be adjusted, and when playing MIDI files, each of the 16 MIDI channels can be individually altered via the MIDI Mixer.

Audio Dynamics is currently working on a new version of the SuperSound software which should be available by the time you read this. The user-interface is being given a complete facelift and bugs such as the one above are being fixed.



The MIDI Mixer panel

CONCLUSION

The Super Sound Expansion System is an entertaining and well implemented product ideal for anyone who uses music software such as Rhapsody on a regular basis. However, it currently doesn't offer anything that will appeal to non-music/MIDI users. Multimedia support in the form of direct sound output for Acorn Replay movies is said to be coming, but is not currently available, and games players won't benefit from it as it doesn't provide SoundBlaster/MPC compatibility.

Audio Dynamics is planning numerous extensions and updates, including analogue-to-digital, digital-to-digital and direct-to-disc recording, on-board RAM so that you can add your own samples to the General MIDI selection, and the ability to edit the synthesizer sounds. This is all in the future however.

If you want to upgrade your Archimedes' or Risc PC's sound capabilities you can't really go wrong with the Super Sound Expansion System. It does what it sets out to do very well. I just feel that at £299 ex. VAT the system is too expensive.

PRODUCT INFO

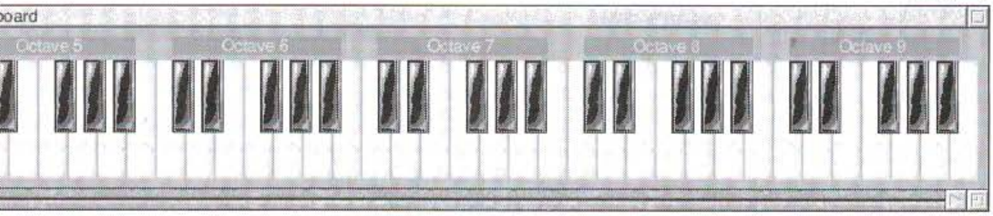
Product	*Super Sound Expansion System*
Supplier	*Audio Dynamics* *10 Durnford Close* *Norden, Rochdale* *Lancs OL12 7RX* *Tel. 0706 868803* *Fax 0706 868803*
Price	*£299.00 ex. VAT*

English Translation: You no longer need a MIDI card and MIDI keyboard to be able to get the best out of programs such as Rhapsody 3, Notate and even Maestro. The SSES provides the entire General MIDI set of sound samples which are standard on most MIDI keyboards. The General MIDI samples, known as 'waves', include pianos, guitars, vocals, pads, bases and a whole range of orchestral sounds. The sample quality is very good, although a purist will probably shudder at the synthesized 'feel' of the sounds.

English Translation: Instead of playing a sampled sound, either created by yourself with a sound sampler such as the Lark or Oak Recorder or supplied with programs such as AudioWorks and Digital Symphony, through the Archimedes' or Risc PC's internal sound system, you can play it back at any speed with CD quality through the SSES.

English Translation: The SSES has its own on-board processor so that it doesn't slow down the computer when generating or playing back samples.

English Translation: The small input/output box which sits next to the computer connects to the expansion card via a 1 metre cable. It provides sockets that enable it to be connected to any MIDI device (an external keyboard for example), your hi-fi system or a set of Walkman headphones. The SSES doesn't come with speakers of any sort, so you will need headphones or a hi-fi to hear its output.



DTP Resources

Mike Williams looks at some useful desktop publishing aids

Design Concept's Kerner

Kerning is the process by which pairs of characters can be moved closer together or further apart. If each character is considered to occupy a fixed rectangular area, then certain pairs of characters can seem to be badly spaced when adjacent to one another. The classic example in this respect is the 'AW' pair - because of their matching shapes, these two letters (in upper case) appear too far apart (see figure 1). Up until RISC OS 3.1, the outline font manager had no direct provision for kerning fonts, and fonts supplied at that time did not usually contain kerning information. That has now changed with RISC OS 3.1, but kerning is no use if existing fonts are missing the relevant data. That's where Design Concept's *Kerner* comes to the rescue.

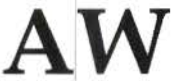
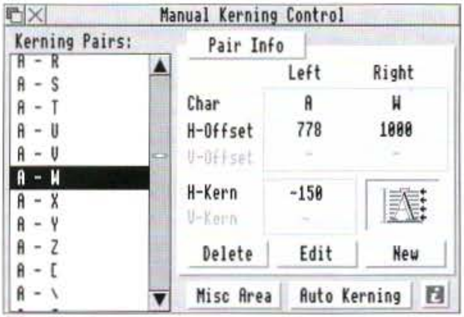


Figure 1. Typical spacing problem solved by kerning



Kerning Pairs:
A - R
A - S
A - T
A - U
A - V
A - W
A - X
A - Y
A - Z
A - [
A - \

	Left	Right
Char	A	W
H-Offset	778	1000
V-Offset	-	-
H-Kern	-150	
V-Kern	-	

Figure 2. The Manual Kerning Control window

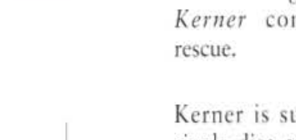
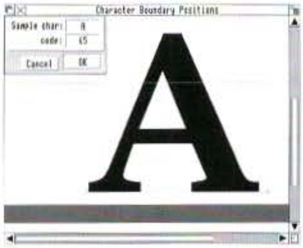


Figure 3. Manually kerning a pair of characters

Kerner is supplied on a single disc containing the Kerner application itself, and a number of other resources, accompanied by a 32 page manual. While a number of applications have built in the facility to kern manually existing fonts (Ovation for example), what Kerner does is to add relevant kerning data to the font definition so that kerning can take place automatically.



Sample char: A
code: 65

Figure 4. Editing a single character

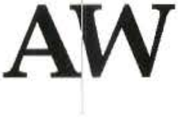


Figure 5. The example of figure 1 now automatically kerned with the help of KernAll

Once Kerner has been installed you can either drag a font file or directory to its icon, or use Kerner's menu to select and load a font for you. Once the font is loaded the *Manual Kerning Control* window will be displayed (see figure 2). At this point you have a choice of manually controlling the generation of kerning data, or having Kerner do this for you automatically.

AUTOMATIC KERNING

Most users, if they are interested in kerning at all, will probably opt for the auto option. There are still plenty of parameters to tinker with if you're really keen, but the main choice you need to make is the list of character pairs to be kerned. You can type these into the space in the kerning window, but Design Concept make life easy here too by providing three choices of preset file. Another method is to set ASCII code ranges for the first and second character of each pair. Whatever method, you then click on the *Calculate* button and wait; what follows can take some time.

On completion, all the kerned pairs will be visible in a scrollable window. You can examine the detailed kerning of each pair and adjust it manually if you wish. You can also delete pairs and add new pairs to the list. Once you are satisfied with the results a menu option allows you to saved the kerned font back to disc to replace the original.

MANUAL KERNING

Automatically generated kerning pairs can still be adjusted manually. If you opt for totally manual kerning then you simply do all the work yourself, using the mouse to position the characters of each pair in the *Edit kern pair* window (figure 3). Kerner also allows you to edit other font attributes such as character heights, underline, default offsets and font bounding box (figure 4). Indeed the font enthusiast is sure to find within Kerner plenty to wile away the hours.

KERNED FONTS IN USE

Remember that what we have been talking about is using Kerner to add kerning data to existing fonts. The real aim is to ensure that when such fonts are used, appropriate character pairs will be kerned automatically for optimum visual results. Unfortunately, in that respect, you are likely to be disappointed. In most cases you won't see any difference because the application you are using doesn't have the code to recognised kerned fonts when they occur.

To overcome this, Design Concept has supplied a small module which makes it all happen. If *KernAll* is loaded before any application, then kerning will take place automatically from then on regardless of the application. Figure 5 shows the results of my efforts to add kerning data to the font Paladin.Bold. In fact exactly the same Draw file was used as for the example of figure 1, but simply reloaded after kerning the font and loading KernAll.

SUMMARY

For just £15, Kerner is a cheap way of upgrading all your existing fonts and introducing automatic kerning to your desktop. Whether you need to do this is up to you, but it's nice to think that all your printed (or displayed) text will now include this sophistication. It could be time-consuming to convert all your fonts, and once converted they will take up more space (about 20% more in the example I tried) on your hard disc. The manual is quite detailed, but less technical users simply wanting Kerner to do all the work for them may find it hard going. All in all, though, good value for money.

PRODUCT INFO

Product	*Kerner*
Supplier	*Design Concept* *30 South Oswald Road* *Edinburgh EH9 2HG* *Tel. 031 668 2000*
Price	*£15 inc. VAT and p&p*

Gothic & Medieval Fonts Pack Two from The Datafile

This is the second font pack with this name to be released by The Datafile (the first was reviewed in RISC User 7:1). The pack, with its colourful flysheet, contains three discs and a short 12 page booklet. As with the first pack, all the new designs are by Tony Nash, and very good they look too. There are six fonts: Abby, Amadeus, Bede, El-Cid, Kells (based on characters in the Irish Book of Kells) and Scriptoria, plus associated swashes (fancy flourishes), borders and examples (as Draw files).

Pack Two draws heavily on Celtic culture for inspiration. Fonts such as Bede and Kells are particularly suited for this purpose, even more so when used in conjunction with the elaborate decorated Celtic capitals supplied as Draw files. The Bede and Kells fonts also contain all the accented characters which are required for correct rendition of Celtic, though these use character codes 128 and upwards and so must be selected using the Alt key method, or whatever.

PRODUCT INFO

Product	*Gothic and Medieval Fonts Collection Two*
Supplier	*The Datafile* *71 Anson Road, Locking* *Weston-super-Mare* *Avon BS24 7DQ* *Tel. 0934 823005*
Price	*£40 inc. VAT and p&p* *(Pack One £37 inc. VAT and p&p)*

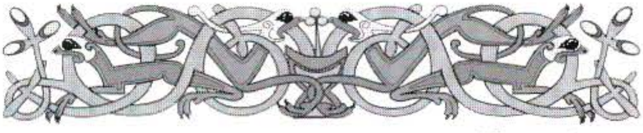


Figure 6. An example of an elaborate border design

There is a wealth of resources in this pack, and the fact that many of these are in the form of Draw files gives the user even more opportunity to modify, extract and mix the designs for almost infinite variety. While Gothic and medieval scripts and designs are not for everyone, there is much here to fascinate and inspire (ideal for schools maybe?), and if you seriously need these types of font, then the designs are a delight to behold, as the illustrations show. The price might seem a little high, but these are all original designs, in many cases highly elaborate and intricate, and apart from the fonts and swashes, in colour too.

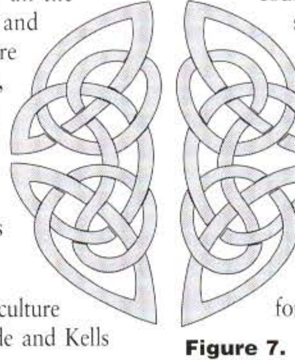


Figure 7. One of the intricate 'knots' from the Gothic and Medieval Fonts

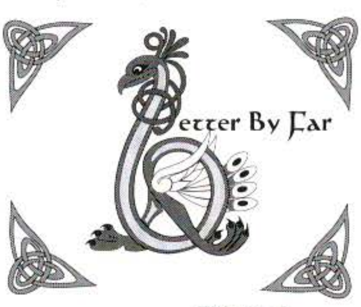


Figure 8. The letter 'B' from the set of illuminated Celtic capitals

in business with Acorn

Alan Highet describes his own experiences of spreading the Acorn word in a world of PCs and Apples.

I wonder how many of you find yourself in the same situation as myself - a lone Acorn user within an environment swamped with PCs? And how many of you wish you could do something to change it? Well, let me explain what I have done so far to try and redress the balance.

Firstly, let me say that I do not think that the IBM PC is rubbish, but only that it is still tied down to outdated architecture which survives only through an unwillingness among users to try something new. Acorn however are going along the right lines with open architecture allowing the user to decide which operating system best suits his needs for a particular task, rather than being tied to the hardware vendor. This also means that you have the pick of all the software on the market regardless of the platform required to run it.

I work for The Television House, a television production facility, which is part of the Central Television Group. I was promoted, if that's the right word, to the position of Design Estimator about four years ago and, at that time, the head of department was very keen to be seen to be using computers. Knowing my interests, he immediately suggested the purchase of a computer to aid our department in its task which was, and is, the estimation of material and labour costs for the construction of scenery and the subsequent tracking of actual costs during construction.

Being new to the job I suggested a few months' postponement of any purchase during which time the suitability of computerisation could be assessed and regard could be made to the appropriate system to buy, although I hoped to be able to recommend Acorn.

It soon became evident that a computer would be very useful in the collation of all the data although, as the other member of the department had no computer experience, every task undertaken on the computer would need to be duplicated on paper, at least to start with.

Eventually I decided on an A410 with 4Mb memory and an ARM3 along with a hi-res monitor, a laser printer and some suitable software. To my surprise the purchase was agreed immediately with no questions being raised as to whether an IBM PC would be more suitable. It was only later that I realised that nobody involved really knew anything about computers and I could have bought anything without difficult questions being asked.

In the following years the computer side of the company became slightly more organised with someone who knew about computers being put in charge, and a preferred supplier was chosen for all desktop and portable machines. Within a few years two networked mainframe computer systems were installed which ran two totally different systems. One was a VAX/VMS system with a 132 column display while the other was a DEC system with an 80 column screen. For various reasons this meant that most PCs were unable to access both systems (although they can now under Windows) while my Acorn didn't seem to have any trouble even with PD software. One up to Acorn!

During this time I was told that if I had to replace my machine for any reason I would almost certainly have to buy a PC. When I asked why, I got the usual response that it was "industry standard", which would give me, amongst other things, file compatibility. In the four years since then I have never had to swap a file for company business! Mind you, if I had needed to read other files, most software on the Acorn platform will read files from the more well known PC products, although this could still improve. I was also made aware that technical support would not be available for an Acorn machine through our service contract. This hasn't been a problem as any support I have needed has been found within the Acorn dealership or from the largely free technical support from suppliers.

Things have changed a lot recently with the formation of our Production Facilities Company and a much reduced workforce. Purchasing decisions are made by a small management group who understand each person's individual requirements for a computer. I was very pleased, therefore, to find that when I asked to part exchange my A410 for a Risc PC there was no problem at all, although the availability of the PC card may have swayed some people. I am now trying to persuade our graphics department to at least try out a Risc PC as I feel they would benefit from its superb graphics capability as well as its impressive speed.

At the the moment they use a large Amiga for any DTP work while all their graphics work is performed on a dedicated machine such as HAL. They have sought quotes on an Apple Quadra along with various software packages and a flatbed scanner. The best quote they received was approximately £8800 and this was heavily discounted. In one hour I had put together a comparable Acorn package which retailed at £6300 - a not insignificant saving! Add to this the low cost professional broadcast video cards soon to be available, the possible links to Quantel graphics machines and the Eidos video editing software and you have a very powerful, low cost, machine.

Unfortunately price is not the only criterion and one of the main objections to buying anything other than an Apple is that all printers and all serious graphic designers use Apples. I'm afraid this doesn't hold much sway with me as most printers work primarily with PostScript files which are machine independent. There are also some good professional printing houses that accept Acorn files and are apparently cheaper than some of the Apple-based houses.

As far as designers using Apples, well this is true, but only because there has been no serious contender until recently. With the advent of fast graphical PCs and the new Acorn machines there is no excuse for staying with Apple unless that's what you have been used to. In our case this is not true as none of the graphic artists are Apple trained and therefore have no prejudices one way or the other.

While I'm on the subject, we have all heard Acorn's views about Apple's recent advertising campaign for the PowerPC but I think their suppliers need taking to task as well. The company who quoted for our graphics department said that the software is so easy to use you will be working with it productively within the day! In my view any software that is totally usable in one day isn't worth having!

On a more cheerful note I must say that, although I own the only Acorn machine in The Television House, there are others that have appeared every so often. They are brought in by external companies who use them to control various items for games shows. The latest of these is a show called *Body Heat*. For this show a huge range of gym equipment was wired up to an A5000 through proprietary interfaces to animate Amiga generated graphics.

Nearly all games shows on television have a computer running some aspect of the show and Acorn seem to be one of the most popular. The first show I remember was *The Price is Right* which ran on two Beebs.

However, not all shows are computerised. One of our longest running shows, *Blockbusters*, was originally produced long before sophisticated graphics computers were available, and to this day each letter is generated from a glass slide in pairs of projectors. Each letter space on the board contains two projectors and six coloured lights and the whole thing is controlled from a large electro-mechanical control panel.

They did look for some quotes to computerise it some years ago but the quotes ran to six figures and so the idea was dropped. I was amazed that such ludicrous figures could be mentioned considering it took me only a few days to mimic the board on a computer screen, and with the addition of some monitors I could see no more cost. Maybe somebody will buy it from me one day!

The future looks good for Acorn as the Risc PC gains headway in the business market, and hopefully our company will give it more than a cursory glance when their IBMs grow old.

Files for a Rainy Day

Computer Concepts' MacFS brings Macintosh files under the Acorn umbrella; Alan Wrigley investigates

Ever since RISC OS 3 appeared, Acorn machines have had a built-in ability to read and write DOS-format discs (and even before that there were programs available to enable you to do the job). It was only natural that developers should seek to provide the same facility for the other major system prevalent in the outside world - the Apple Macintosh. Despite rumours for several years of commercial Mac disc readers about to surface (there is already one in the public domain), only now has *MacFS* seen the light of day, courtesy of CC.

The problem with accessing Mac discs in the past was the complicated drive system on the Mac itself - the speed at which the drive rotated was not constant but depended on the position of the track being accessed. Newer Macs have now been fitted with more conventional constant-speed drives, and this has opened the way for utilities such as MacFS. This does mean, however, that only computers with a high-density drive (i.e. A5000 and later) can use MacFS, since the new format discs hold 1.44Mb.

PRODUCT INFO

Product	*MacFS*
Supplier	*Computer Concepts* *Gaddesden Place* *Hemel Hempstead* *Herts HP2 6EX* *tel. 0442 63933* *fax 0442 231632*
Price	*£99 ex. VAT*

MacFS IN USE

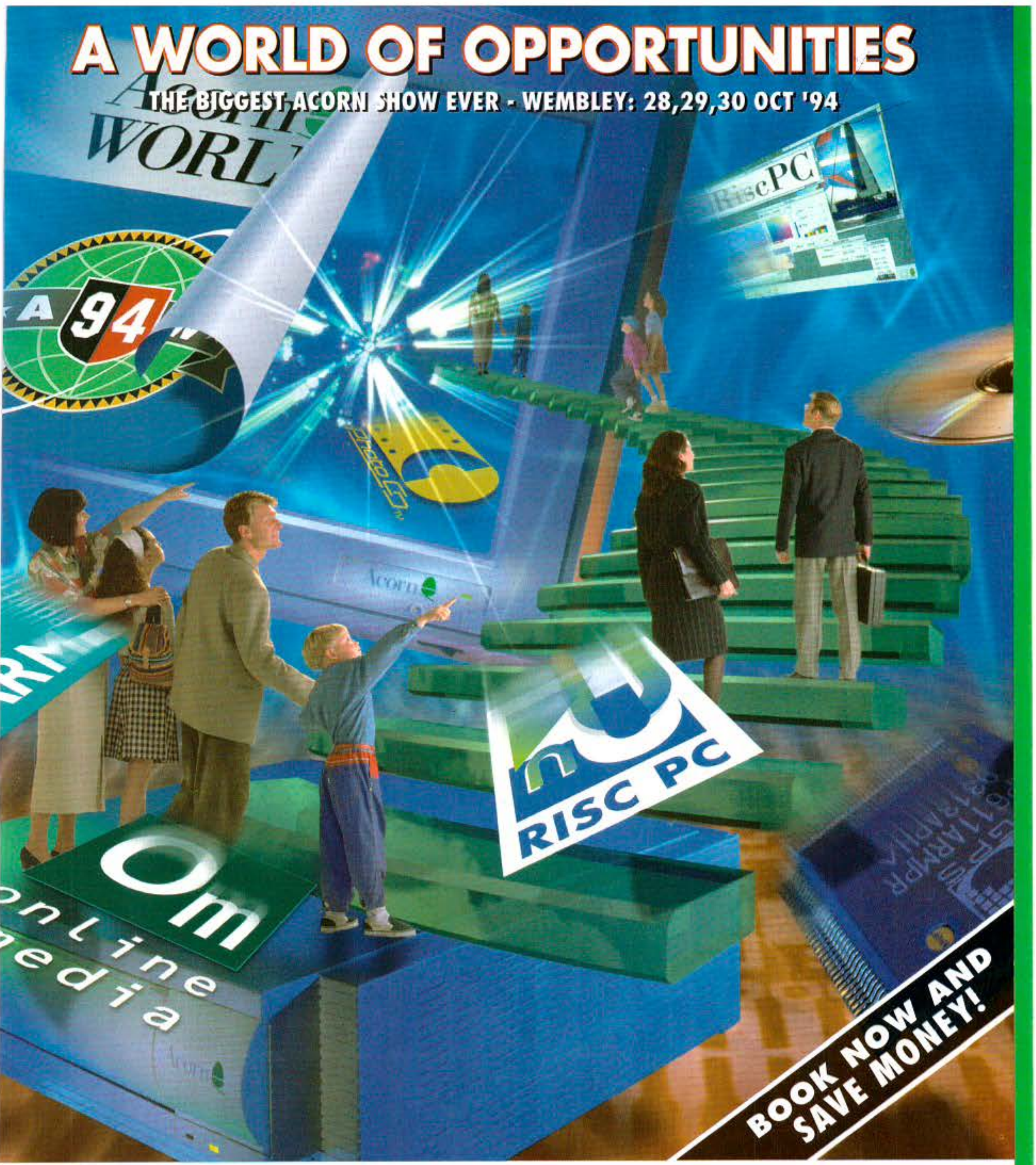
MacFS is delightfully simple to use. It consists essentially of a module which when installed adds a new filing system to those already in your machine. Once this is done, the Mac system works in exactly the same way as RISC OS 3's built-in DOS filing system. To read a Mac disc, just put it into the drive and click on the drive icon on the icon bar; MacFS will recognise it as a Mac disc and open a directory viewer. The contents of the disc can be read or written just as if it was an ADFS or DOS disc. To format a Mac disc, go to the *Other formats* submenu and you will find that *Mac 1.44M* has been added to the list of possible formats.

Before you can use MacFS in a real environment, however, you will almost certainly need to do a little work. This is to ensure that filetypes common to both systems (text, TIFF, EPS etc.) are mapped from one system to the other. For example, if you are working with TIFF files and want to transfer them from Acorn to Apple or vice versa, then both computers need to recognise the files as TIFF. This is quite simple to do by including a line in the !Run file for MacFS. This effectively says "when you see a file of type xxx on one computer, treat it as type yyy on the other". The documentation with MacFS provides guidance on how to do this, but you may find that you need to experiment until everything works correctly, particularly since Mac filetypes include details of the application which created the file. So for example EPS files created by Illustrator will appear to be different from those created by XPress.

Once you have set up the system to suit your own requirements, using it is very simple. You can output EPS files from ArtWorks, save them on a Mac disc and import them directly into Illustrator as easily as it took me to type this sentence. Going the other way is just as easy - your Illustrator EPS file from the Mac will appear in the Acorn directory viewer as a PostScript file, and you can just drop it into ArtWorks. The same ease of transfer applies to text, TIFF, JPEG and any other filetypes that are recognised by applications on both systems.

In the case of unknown filetypes coming from the Mac, these simply appear on the Acorn side as a *MacForks* filetype (so called because most Mac files have two components - the data fork and the resource fork). This filetype acts like a directory - double-clicking on it opens a further viewer containing the two components as raw data files. Going the other way may cause more problems since unmapped Acorn types are passed to the Mac as "&FFFAcrn". It is most unlikely that any Mac application will recognise this, so careful mapping of all filetypes that you use is essential.

MacFS will surely be a boon to any Acorn users who need to transfer files to and from Mac systems. It will greatly speed up the dialogue between those who generate material for printing and the bureaux who handle the image-setting, particularly in view of the ability of programs such as ArtWorks to output EPS files which can be dropped straight into Illustrator or PhotoShop at the other end. The software appears to work faultlessly, and although not exactly cheap, all I can say is if you need it, buy it.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Customising the Risc PC Start-Up

David Spencer explains the rather involved auto-boot system used on the Risc PC

If you ever get a chance to look at a number of different serious users' computers, there is a good chance that you will find that each has its own weird and wonderful boot sequence to customise it to its owner's requirements. The complexity of the processes involved in such customising has often been criticised, and Acorn have responded by incorporating what they call a structured boot sequence into RISC OS 3.5 in the Risc PC. However, I'm sure that many Risc PC users gave up as soon as they saw the innards of the !Boot application. Hopefully, though, this article will make matters somewhat clearer.

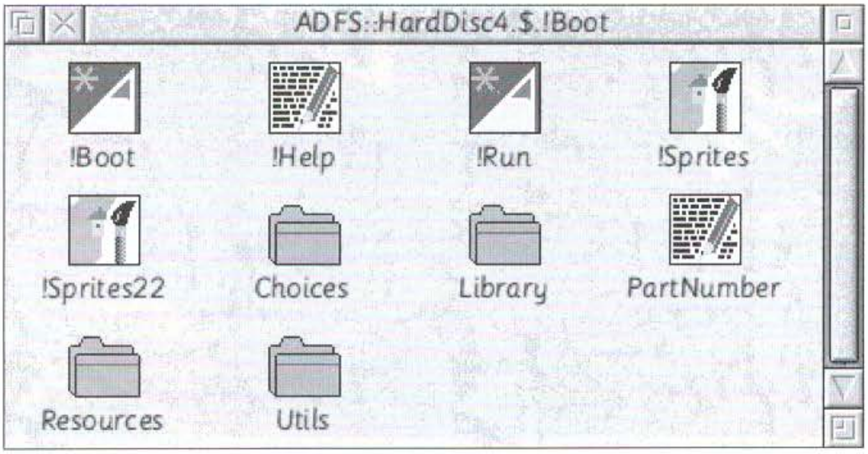
THE !BOOT APPLICATION

The Risc PC is shipped with an application called *!Boot* on its hard drive, and it is this that is responsible for setting up the user's preferences. By default, the CMOS RAM configuration is set to auto-boot from the default hard drive, which is in turn set to run the !Boot application. Hence, !Boot is always run on reset. Incidentally, double-clicking on !Boot from the Desktop invokes the Configure application for altering CMOS RAM setting. This is described in the RISC OS 3.5 User Guide. Therefore, !Boot is special in that running it automatically brings about a totally different response to running it explicitly.

CUSTOMISING !BOOT

In its simplest form, !Boot can be customised by using the *Desktop boot* save box provided by the Task Manager to save a Desktop Boot file which holds details of the Desktop's history to date, so for example, directory displays are automatically opened in the same place, and the pinboard is set up. This system is almost unchanged since RISC OS 3.1, though you must click on *OK* to use the default filename, rather than trying to drag the *!Boot* file anywhere.

More detailed customisation involves going into the !Boot application directory, by double-clicking on it with Shift held down. The actual internal structure of !Boot is rather complicated, with a large number of files and nested sub-directories. Luckily though, most of these files and directories are fixed resources that do not need altering (and which shouldn't be altered).



The contents of the !Boot application directory.

The main customising procedure concerns the automatic execution or loading of applications and other files during the start-up, and the defining of system variables (such as file types). These fall into two categories: files which are executed before the desktop is started, and files which are executed after it has been started. The former category includes things such as modules needed to drive additional hardware, whilst the latter category includes items such as the !Boot file saved from the Task Manager as mentioned earlier.

The file *$.!Boot.Choices.Boot.PreDesktop* is an Obey file that is run before the desktop is started. The file is split into five sections by function: setting of aliases for filetypes, the setting of paths (such as the library path), the setting of options, the registering of applications, and finally, the setting of any miscellaneous variables, such as an email name. All of these are fairly self-explanatory, except for the registering of applications. What this does is to use the *AddApp* command (which is actually a program located elsewhere in !Boot) to add applications to the *Apps* pseudo filing system. You can see how this is done by looking at the *PreDesktop* file which is well commented, though note that a much easier way of adding applications is described below. You can add any commands that you like to this file, but to maintain order you should fit them into the appropriate category, and bracket any added lines with the comments '|start' and '|end'.

After the PreDesktop file has been run, the contents of the directory *$.!Boot.Choices.Boot.PreDesk* are run one by one in alphabetical order. This directory can contain applications, modules, sprites or obey files, all of which will be run just before the desktop is started.

Once the pre-desktop procedures have been completed, the desktop is started, and the contents of the directory *$.!Boot.Choices.Boot.Tasks* are run. By default, this directory contains a configuration file (to set things like the backdrop texture), and also the !Boot file as saved from the Task Manager. You can add anything that you wish to here, but normally it would be applications that are added. These are then run as if the user had opened a directory display with them in and double-clicked on them.

If you want to automatically *Filer_Boot* an application (equivalent to opening a directory display containing it), but not run it, then this can be done by putting the application in the directory *$.!Boot.Resources*, alongside the likes of !System and !Fonts.

ADDING RESOURCES

Although both !Fonts and !System are buried within !Boot, neither of them should be altered directly, for fear of destroying data accidentally. Instead, the Configure application invoked by double-clicking on !Boot should be used to merge fonts and system resources, as described in the User Guide.

One thing that can be added directly is extra monitor definition files. These are all contained within the directory *$.!Boot.Resources.Configure.Monitors.* The definition files (probably supplied with the monitor) can either be put in this directory directly, or, as is the case for the standard Acorn files, grouped into a sub-directory by manufacturer.

ADDING APPLICATIONS AND UTILITIES

Another way that the computer can be customised is by adding additional applications to the Apps pseudo filing system. This can be done simply by copying the desired applications into the *$.Apps* directory. At start-up these will automatically be added to the Apps filing system and Filer_Booted (equivalent to displaying a directory containing them).

You can also add any utility-type applications to the *$.Utilities* directory. The boot sequence Filer_Boots all of the applications in this directory at start-up. This means that all the applications' !Boot files get run, thus allowing them to perform operations such as setting up filetypes and filetype icons. So for example, if the *$.Utilities* directory contained an application that processed files of type, say, Template, then it would be invoked automatically when a template file was double-clicked on, even though the application itself hadn't been seen by the user.

USING !BOOT WITH A NETWORK

Finally we will look at the use of !Boot for network users. It is very common in a networked environment to run a boot file off the network at start-up time, which is obviously in conflict with auto-booting from the hard disc. For network managers needing to do just this, Acorn have produced an application note, number 251, which is available on request from Acorn's customer services department.

Another possibility with a network is to use the Risc PC !Boot as the auto-boot code for all the computers on the network. This is made possible because !Boot detects which version of operating system it is running on and can distinguish both RISC OS 2 and RISC OS 3.1 separately. It will then run user-supplied boot sequences appropriate to the operating system. Again, this is described in the application note mentioned above.

Studio24

Mike Williams assesses Pineapple Software's entry in the image processing stakes.

Pineapple Software's *Studio24* is another in the recent spate of 24-bit art and image processing packages inspired by Acorn's design of the Risc PC. The July issue of RISC User (7:8) reviewed Clares' *ProArtisan24* and Spacetech's *Photodesk*. Then there is Oregan's *PhotoTouch*, and Digital Arts' *Picture*, also reviewed in this issue. With all such substantial packages it is not only the range and type of function which is important, but the ease and facility with which these features can be used in real work. That of course can only be fully assessed over a period of time, so I shall be concentrating here on Studio24's main characteristics, but I will comment as appropriate on the feel of the package and its ease of use. The copy of Studio24 and manual provided for review was pre-release, so you may find some differences compared with the released version.

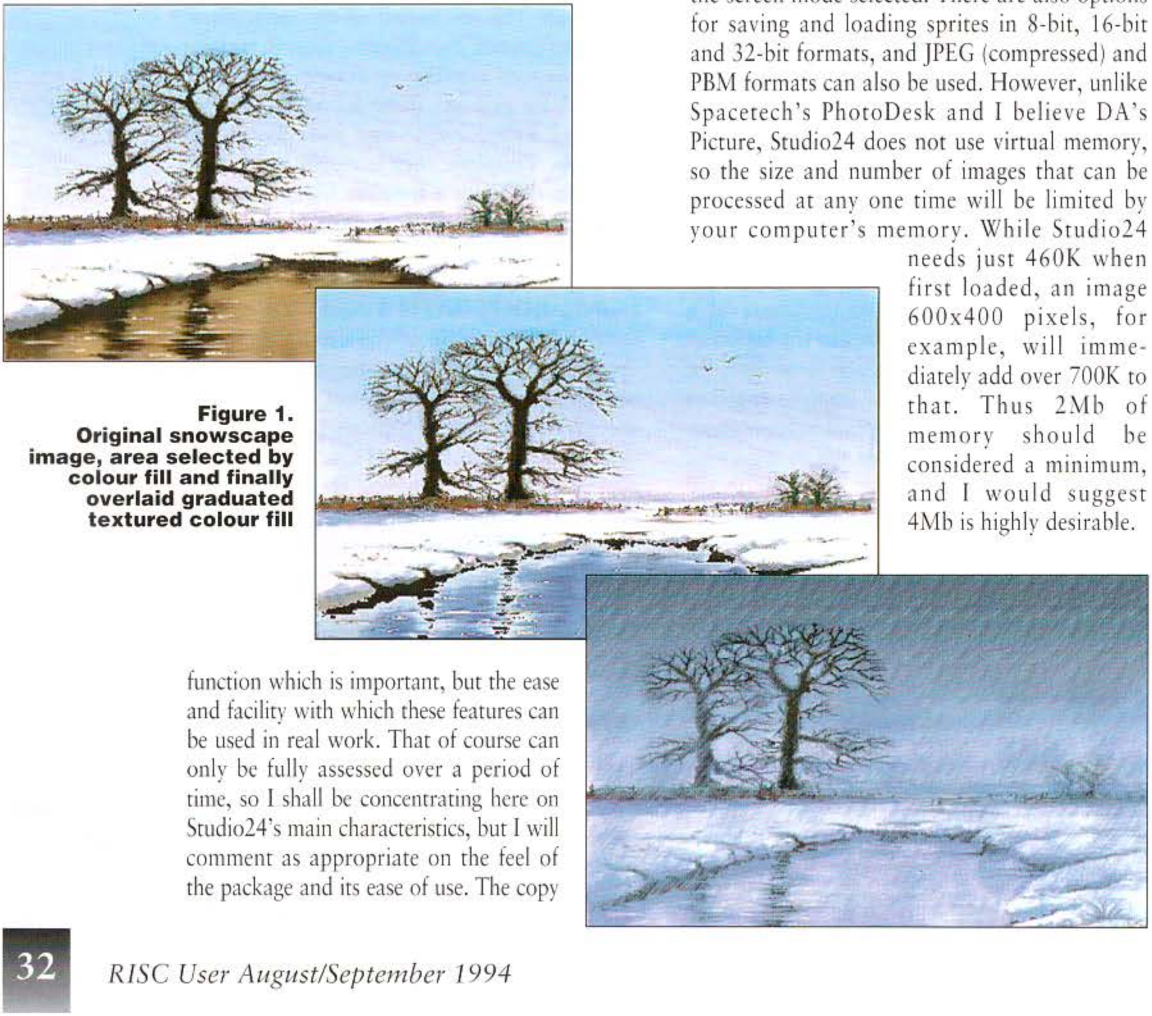
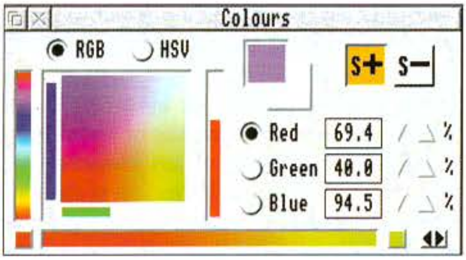


Figure 1. Original snowscape image, area selected by colour fill and finally overlaid graduated textured colour fill



Colours

● RGB ○ HSV

● Red 69.4 %
○ Green 40.0 %
○ Blue 94.5 %

Figure 2. Studio24's colour picker

To start with let's get some facts straight about Studio24. All images are manipulated in 24-bit colour, and normally stored as Clear files, a standard uncompressed format recognised by many other Arc-based image processing packages. However, Studio24 is designed to run on all Archimedes systems, not just the Risc PC, and images are rendered on screen according to the screen mode selected. There are also options for saving and loading sprites in 8-bit, 16-bit and 32-bit formats, and JPEG (compressed) and PBM formats can also be used. However, unlike Spacetech's PhotoDesk and I believe DA's Picture, Studio24 does not use virtual memory, so the size and number of images that can be processed at any one time will be limited by your computer's memory. While Studio24 needs just 460K when first loaded, an image 600x400 pixels, for example, will immediately add over 700K to that. Thus 2Mb of memory should be considered a minimum, and I would suggest 4Mb is highly desirable.

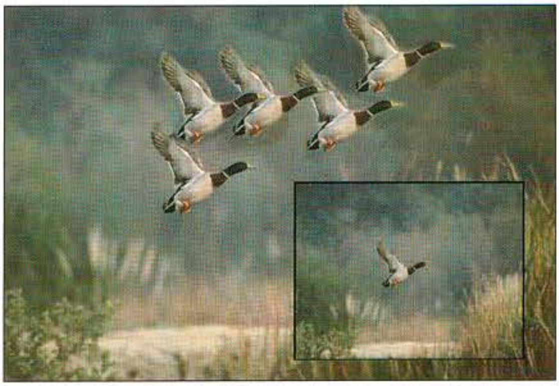


Figure 3.
Using Studio24 to process a photographic image (inset) using cut and paste and the Smudge brush

MODES, MENUS AND TOOLBARS

In Studio24 terms, an image area is referred to as a *canvas*, and all the features of Studio24 are then controlled via a *mode* panel (at the left), with the currently selected mode related to a corresponding toolbar at the foot of the canvas, plus a standard menu system. The main modes provided by Studio24 cover selection and use of main screen and stencil screen, the obligatory brush and pencil modes, magnification, cut & paste, text input, special effects, fills and undo (the left pointing arrow). The mode panel also shows the currently selected opacity and choice of texture.

Figure 4.
Camera-eye by Walter Briggs

The mode panel is not as clear as I would wish, particularly with regard to the four small buttons at its head, and having attributes of a toolbar function partly controlled by a menu system is, I feel, potentially confusing. However, it does also lead to considerable flexibility in what can be done. I would also have preferred to control colour selection from the mode panel, as in other packages like ProArt24, whereas Studio24 uses the menu alone. In what follows, I shall not bother to described all the features of Studio24, but highlight those that stand out as being unusual or worthy of comment in some way.

COLOUR SELECTION AND GRADUATED FILLS

Since we have referred to colour selection let's take a quick look at the colour picker used by Studio24 (figure 2). This is similar to the standard Acorn colour picker, without the CMYK approach to colour selection, but including the facility

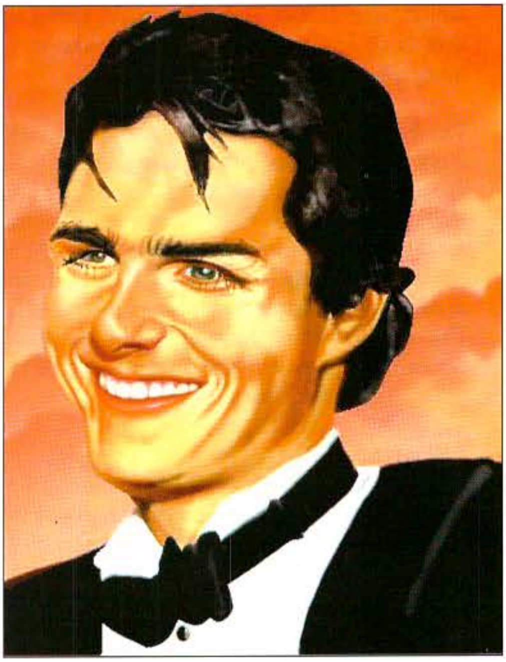


Figure 5.
Cruise by Walter Briggs

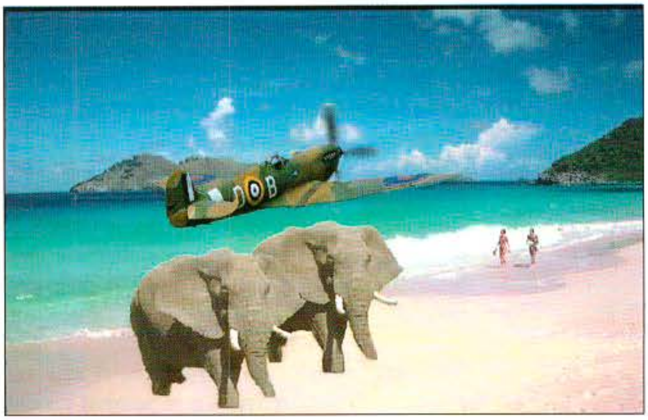


Figure 6.
Close encounters courtesy of Studio24

to create graduated colour fills. This provides a linear graduation only (compared with Photodesk's mathematically controlled one), and provides a graduated scale between just two selected colours, compared with the multiple colour graduations which can be created with ProArt24. But this is where Studio24's flexibility comes to the fore. The main menu has a so-called *Fill tolerance* setting; at 0% the slightest change of colour provides a boundary to the fill process (as normal), while a setting of 100% provides no barrier at all. A setting of, say, 50% allows one graduated fill to overlay another of a relatively similar range of hues, and if the opacity setting is kept fairly low (about 15%), then some very subtle effects can result.

The Fill tolerance can also be useful in other ways. Special effects, processes and filters, are applied to a selected area of the canvas. The Fill tolerance can be used to select an area by filling much more accurately and realistically than could probably be achieved by the freehand drawing of an irregular outline (see figure 1). This also shows how a texture can be combined with a low opacity setting and a graduated fill to achieve yet further effects.

BRUSHES

Different brush shapes can be loaded onto the brush toolbar. A selection of these is provided in the form of sprites, and the manual describes how Studio24 can be used to create further brush shapes as required. Brushes can also be selected in one of eight sizes. The main menu also provides a very useful *Smoothing* level which can be used to give much smoother results when working freehand. There are two brush types of particular note. The first of these is the *Smudge* brush, and very effective I found this to be. It reproduces very realistically the effect of rubbing your finger over colour (in the form of chalk, crayon or pastel) applied to a sheet of material. And as with most functions, the opacity setting also affects this operation. Smudging can be used in many creative designs, but it can also be used in appropriate circumstances to blend an image cut from one source and pasted into another, so that the join between the two images is well nigh invisible (see figure 3).

The other brush is that for special effects. Processes, but not filters, can be selected via the menu system, and the process applied to the selected area of the canvas as already explained. However, by selecting the Effects brush, a process can also be applied to the canvas in brush format, which means that you can also control the shape, size and opacity of the brush used. The processes available are *Invert*, *Lightness*, *Contrast*, *Saturation*, *RGB balance*, *Grey noise*, *RGB noise* and *Adjust levels*. In most cases selection involves a slider bar to set the scale of the process, and some processes allow both positive and negative values to both increase and decrease the effect (e.g. the Lightness process can be used to both lighten and darken parts of the canvas). The duration for which the mouse button is depressed also controls the intensity of the resulting image. This highlights one problem with Studio24 when running on a Risc PC: some operations are just too fast to be controlled with sufficient precision. This includes some painting effects, and parameter settings for slider bars etc - an irritating blemish, but one which Pineapple says is being addressed.

CUT AND PASTE

Cut & paste operations are much as one would expect, but again the paste operation is also affected by the opacity setting. There is no built-in clipboard as such, but all that is needed is to cut round an image (or part thereof) and transfer to another canvas, process as required, and then cut & paste to wherever it is required (the inset in figure 3 was treated in this way, cutting out part of the original image, rescaling and adding a border before pasting onto the main picture). The main menu provides selection of a Paste mode, which determines how the image is pasted onto the canvas (Blend, Add, Subtract, Difference, Multiply, Lighten/Darken).

TEXT INPUT

Text mode makes full use of any outline fonts available, and text can also be rotated by a specified angle, but not rotated in situ. The text, a single line, is entered first, and then appears attached to the pointer as this is moved over the canvas. Once again, this is also affected by the choice of texture and opacity, and the Select button controls the intensity of the image.

FILTERS GALORE

The last feature which deserves some mention is the choice of filter provided. There are fourteen options available via the menu system, and all of these can be further customised and saved with a new name by the user. Features included cover blurring, sharpening, embossing and others. The menu provides five further non-customisable filters, and there is the option for the effect of any filter to wrap around from edge to edge. All filters are subject to some degree of additional control, either in terms of the 'strength' of the effect expressed as a percentage, or as a radius defining the extent of the area to be affected (in pixels). Only experience over a period of time and in a variety of circumstances will show the full extent of what can be achieved with filters in any image processing package, and Studio24 is no exception in this respect.

CONCLUSIONS

As always it is very difficult to sum up one's views on such a major application as Studio24, as it is the combination of effects and features which determines what you can do, and there are a myriad of permutations. However, I hope the illustrations give you some idea of its capabilities.

First let me get some little niggles off my chest. The combination of mode panel, tools and menu options has a slightly confused and cluttered feel to it - the design behind this, i.e. how a user controls and accesses a particular feature, needs a little more thought in my view. That an image can only be created by specifying pixel sizes (not page sizes as in PhotoDesk) is a possible minor limitation. I also found the *Undo/Redo* feature a little difficult to get used to. *Undo* does not 'undo' in steps, but back to the last save or change of mode/tool, and at a single stroke. Thus if you select the Smudge brush, and make a number of smudges, Undo removes all of these, not just the last one - I would prefer a more 'graduated' Undo option.

On the positive side, Studio24 is extremely flexible in the way in which attributes can be combined, both in a single operation (choice of brush size, style, texture, opacity, smoothing, colour etc.), and in a sequence of steps (e.g. multiple overlaid graduated colour fills using the Fill tolerance facility). Compared with some image processing packages, Studio24 achieves extremely smooth gradations of colour, whatever means is used to create them. For example, some airbrush tools can result in obvious patterns of colour when a smooth graduation is needed. Studio24 also has some outstanding features, its Smudge brush being one, and the use of smoothing and fill tolerance levels another. It has most of the drawing and painting tools which one might expect, though not all, plus fills, text, stencils, cut & paste, and a goodly range of effects and filters.

How does it compare with other similar software? Should you view Studio24 as an art package with image processing capabilities, or as an image processing package with painting capabilities? It is best compared, perhaps, with ProArt24 in determining its position in the marketplace, and I have a slight preference for Studio24, although ProArt24 is, in my view, the more professional looking product on screen. As far as image processing is concerned, Studio24 performs reasonably well, and you will be able to achieve much when working with photographic images (see figures 3 & 6). However, the absence of a virtual memory system, and the relative lack of precision and finesse in operation mean that Studio24 will probably not satisfy the demands of the more professional high-end user in this respect, but it will work on all Archimedes systems with sufficient memory, not just a Risc PC.

PRODUCT INFO

Product	*Studio24*
Supplier	*Pineapple Software* *39 Brownlea Gardens,* *Seven Kings,* *Ilford,* *Essex IG3 9NL.* *Tel. 081 599 1476* *Fax 081 598 2343*
Price	*£125 ex. VAT* *Demo £5 inclusive.*

If you are in the market for such a package, then do take any opportunity to see the software in action before you buy. Pineapple do a demo version of Studio24 complete with full photocopied manual for just £5, and even that's redeemable against the full price of £125 ex. VAT. On its own, I consider Studio24 to be excellent value for money, and it performs well. Choosing between Studio24 and its competitors is much harder. Consider carefully what you want the software for, try beforehand if at all possible, and make your own choice. Studio24 is well worth considering.

ZZZZZZZZzz

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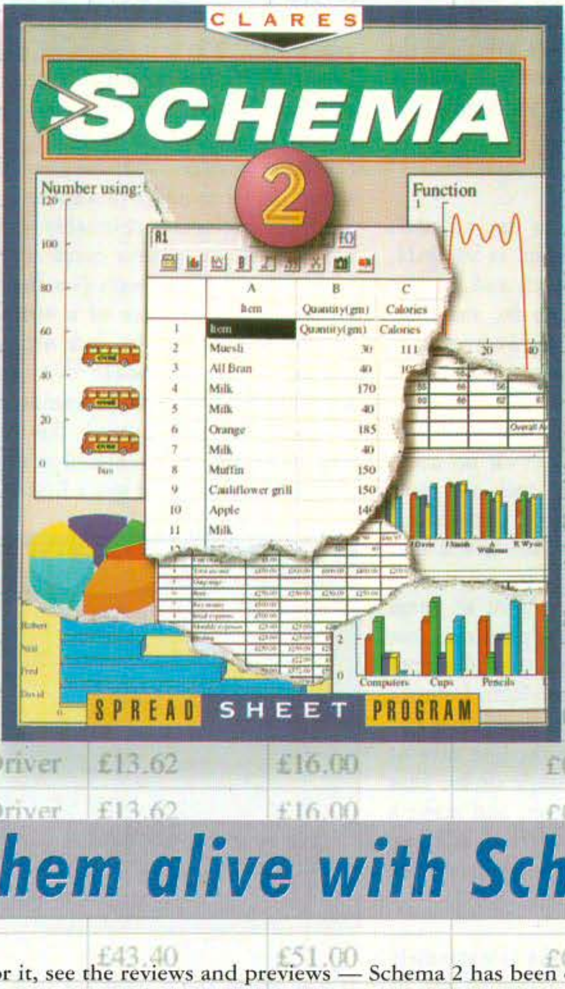

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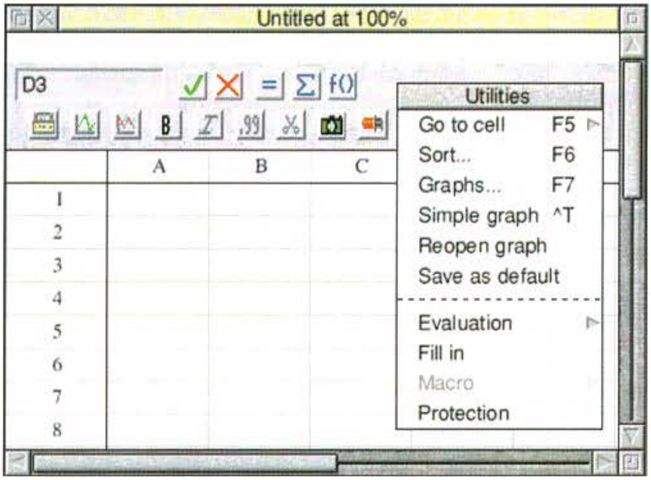
Schema 2 - The Update

Alan Highet updates his views on the latest incarnation of Clares' spreadsheet.

I have now received a release version of Schema 2 and I am pleased to report that nearly everything I said about it in my group survey review (RISC User 7:5) still stands.

Schema 2 comes on a single disc along with an example and resources disc and a hefty 370 page manual. It runs happily on all versions of RISC OS including 3.5, and needs a minimum of 2Mb of memory.

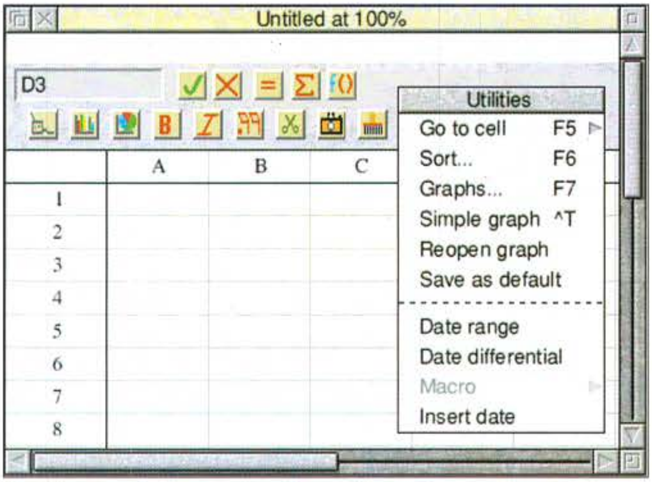


The standard button bar and the utilities menu

On a more general level it is possible to create simple spreadsheets with all access to certain functions removed, which may be beneficial in schools for teachers wishing to simplify the learning process. Menu items may be removed and new ones added enabling custom written macros to be run as if they were native functions. In fact standard functions such as the fill command are actually implemented as macros. Icons may also be added or removed from the button bar, again allowing the running of custom macros.

The manual is well written and well thought out, leading you through a variety of tutorials which gradually introduce all aspects of the program. A section devoted to techniques then explains everything in more detail and provides numerous illustrations to aid learning. Finally there is an appendix which lists all the standard functions and their uses.

Originally I felt that the degree of customisation allowed by Schema 2 was questionable. However, having had a little more time to try things out with the full working version I have changed my views. Because the entire Schema workspace can be saved and reloaded you can generate what appears to be a stand-alone application which will load, request various figures, load these into the relevant parts of the spreadsheet, generate results and close down all from a double click. This can all happen without the user even knowing that a spreadsheet is being used. This is rather an extreme idea but perfectly possible.



The button bar and utilities menu re-designed by the user

Figure 1 shows the standard Schema button bar along with the utilities menu, while Figure 2 shows a somewhat garish redesign of the icon bar as well as some specialist date manipulation options inserted by me into the utilities menu.

The macro language is very similar to the Basic language supplied with all Acorns, and a macro editor and manual is supplied free of charge on request to all registered users. Again the manual is very clear and takes the user through a difficult subject with many examples which are easily followed.

The macro language also includes a fairly comprehensive set of drawing commands which will allow the import of Draw files as well as the generation of quite complex graphics. Imagine being able to generate an engine model directly from a spreadsheet with the ability to try out various dimensional changes and view the results. Maybe I'll try that next week!

I was also pleased to see that Schema had lost nothing of its speed since I last used it, and it is still one of the quickest spreadsheets for recalculation.

My only criticism of Schema 2 is the overall look and feel of the product. I still feel that the Resultz/Fireworkz software has the most professional-looking interface. I know that this isn't everything, and is also subjective, but to attract the business customer software has to compete with the impressive graphical front ends which can be seen on Windows programs.

Where Schema excels is in the superb macro language, which I think is the easiest to use, and the customisation which is extremely easy to implement. The downside to this is the price which is one of the highest on the Acorn platform, although very reasonable when you compare it to other platforms.

PRODUCT INFO

Product	*Schema2*
Supplier	*Clares Micro Supplies* *98 Middlewich Road* *Rudheath Northwich* *Cheshire CW9 7DA* *tel. 0606 48511* *fax 0606 48512*
Price	*£139.00 ex. VAT*

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The RISC OS 3.5 Programmer's Reference Manual

David Spencer looks at Acorn's technical documentation for the Risc PC.

I'm sure there are many technically minded users who have bought their Risc PCs and are eagerly awaiting some technical documentation for it. Well, Acorn are about to release a supplement to the RISC OS 3 *Programmer's Reference Manual* which covers all aspects of RISC OS 3.5 as fitted to the Risc PC.

THE CONTENT

Volume five, as the new supplement is called, runs to just over 300 pages and is split into four main parts, each covering a separate aspect of the system:

The kernel
Filing and networking
The desktop
Hardware support

These sections are further split into a total of nineteen chapters.

Those familiar with the current PRM will realise that these new sections correspond to existing sections in the current four volumes. However, at the individual chapter level, the relationship between old and new is more involved. For example, the new volume contains a chapter entitled *CMOS RAM allocation*, whereas this is currently buried in a global chapter on *Memory Management* (which also has its namesake in the new volume). Conversely, the new volume lumps the serial and parallel device drivers together whereas they previously had their own separate chapters. Couple this with the fact that the new volume contains only new or changed information, and doesn't repeat anything from volumes one to four, and it is probably a good idea to keep a red pen to hand for marking cross references.

In terms of actual content, volume five covers all the features of the operating system that have changed, or been added, since RISC OS 3.1. For example, topics such as the new dynamic memory management system and the colour picker are covered. Additionally, volume five includes some information that is relevant to older operating systems as well, for example, details of AUN networking. Sadly, documentation of the Internet socket interface, the lack of which was one of my moans when reviewing the RISC OS 3 PRM, and which appeared in an earlier draft of this supplement, has once again been dropped.

ERRATA

Another useful feature of volume five is an appendix containing errata for volumes one to four. Acorn recommend that you take the information from this section and scribble it in the appropriate places so that it doesn't get overlooked - sound advice indeed.

CONCLUSION

There's not much to say here really. If you need to know about RISC OS 3.5 then you need the PRM supplement - end of story. My only comment is that Acorn have in my opinion done the right thing by producing only a supplement and not a complete new PRM, which would obviously cost a lot more. No doubt though, some people will argue that a complete new book would have been better structured. Still, that's life isn't it.

The PRM supplement should be available from Acorn dealers soon after you read this, though the price has yet to be finalised. It has also yet to be decided if the supplement will be included automatically with the RISC OS 3 PRM in the future.

Incidentally, for those more interested in the Risc PC hardware, Acorn will also be releasing a Technical Reference Manual around October. This will be along the lines of those for earlier machines, including full details of the hardware and a complete set of circuit diagrams.

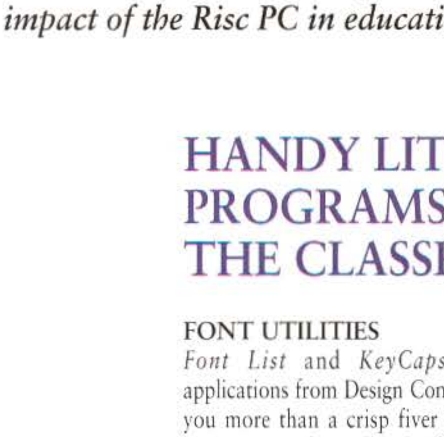
Education

In this month's education section, Chris Drage looks at a number of small but very useful utilities, while Mark Sealey assesses the impact of the Risc PC in education

HANDY LITTLE PROGRAMS FOR THE CLASSROOM

FONT UTILITIES

Font List and *KeyCaps* are multitasking applications from Design Concept. Neither will cost you more than a crisp fiver yet each performs its respective tasks well. The first fulfils a common need: a chart of available fonts for children to be able to identify a suitable font quickly. Font List lists all your fonts in a Draw file. Each font is printed with a message giving the font name and style. The results can be assembled into a logical order in Draw and printed out to produce an ideal aide-memoir.



This is Direct
This is Folio
This is Foundation.Medium
This is FreeHand
This is Futura
This is Gothic.Medium
This is Homerton.Bold
This is Homerton.Bold.Oblique
This is Homerton.Medium
This is Homerton.Medium.Oblique
This is Jarman
This is Jotter
This is Jotter.Italic
This is Jotter.Joined
This is KIDDIEFONT.BOLD
This is KIDDIEFONT.MEDIUM
This is Montclair.Bold
This is Montclair.Bold.Oblique

Font List

KeyCaps provides older pupils with an on-screen aide-memoir for pre-viewing font samples before use in a document. Select a font and click on it, and the classic "The quick brown fox..." is displayed in a chosen size. Click on another font and this is immediately displayed. Both Font List and KeyCaps are simple but jolly effective.

As the number of fonts on the hard disc grows so does the need for increased accessibility. *FontWay* from XOB offers a font filing system to allow easy access to many fonts. As the RISC OS Filer only permits 77 objects in a directory, if you have more fonts than this you must keep them in separate directories. By adopting a sensible and easily remembered system of filing (e.g. alphabetical or according to popular usage), FontWay will permit new font directories to be added at any time.

VIRUS PROTECTION

The Acorn platform is by far the most resilient to virus infection as the operating system is held in ROM. Nevertheless, there are 52 known virus families on the Archimedes (some, like the Icon virus, with up to 16 strains), so there is no reason to be complacent. The only protection system endorsed by Acorn is Pineapple Software's *Killer*, which has a yearly subscription with three or four updated discs a year. Killer is easy to install and use and will issue a warning if a dormant virus is found when you access a disc of any kind (floppy, cartridge or hard disc). It is no coincidence that 75% of Killer subscribers are schools! Ignore it at your peril, Killer is a must.

COMPRESSION

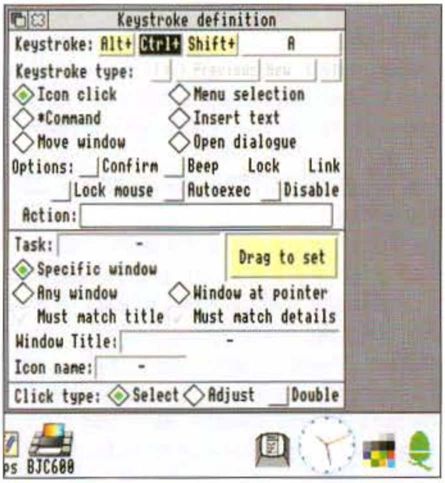
Compressing files is of most interest to schools who for financial reasons need every byte of space on their hard-earned hard discs. Although there is generally a small loss of performance and speed of access it is a small price to pay for the advantage of increasing the capacity of your hard disc or packing data onto floppy discs. Computer Concepts' *Compression* is widely used, yet at less than half the price and likely to be of more use to schools is *KleinFS* which, like Compression, emulates the Filer but also makes use of the Acorn Squash module provided with RISC OS 3. This means that compressed files can be unpacked by anyone whether they have KleinFS or not. KleinFS is easier to use though not quite as fast as Compression, but at the price it can't be beaten!

LOCKING UP

For whatever reason, from time to time one of my school's A3020 computers seems to 'forget' the contents of its CMOS RAM, or its boot file becomes 'mysteriously lost' or altered. It's not due to malicious intent, just ignorance and little fingers! But what can you do to prevent accidental interference with each computer's set-up? *ARMlock* is the answer. ARMlock keeps your hard disc from prying eyes (useful for network users), and prevents interference with the computer's CMOS RAM so that no one is able to configure the computer or unplug modules without knowing the password. All access is controlled, making it easy to set up and maintain. Even formatting can be prevented. There is no special partitioning of the hard disc into writable or read-only areas, just a module which enforces access restrictions and a manager application which controls settings and taking of back-ups. ARMlock prevents unauthorised access to any document or application - foolproof and jolly useful!

KEYSTROKE

If there is a program which is worth its weight in gold when it comes to creating shortcuts or simplifying/improving operations, it has to be *Keystroke* (reviewed in RISC User 6:10). It has such a variety of uses that it is difficult to suggest a main application. For example, if you want to add control key shortcuts to a program like Paint which lacks them, you could add, say, Ctrl-Up to zoom into an image, or similarly, if you want to add an autosave function to a program, there's no problem. You can even make up your own button bar or icons that perform operations when clicked. Furthermore all keypresses can be configured to beep or offer confirmation boxes before performing a function, and multiple commands can be chained together on a single keypress. Keystroke has a huge number of predefined sequences of operations for desktop programs, and if there's none to match your requirements it is really easy to add new ones. Keystroke provides an unlimited choice of keyboard shortcuts which, used intelligently, can substantially increase efficiency.



Keystroke

LABELLING

As a teacher I find there are a dozen or more occasions when I need to use labels: items in the classroom, displays, children's names, addresses and assessments notes etc. There are plenty of database management programs which include label printing, but that is really a case of using a sledgehammer to crack a nut. More appropriate for the myriad of labelling tasks is *LabelBase* which offers a comprehensive range of label formats combined with a simple database. The database has a maximum of ten fields, search and sorting routines and file exchange with other applications. It can also import and convert data from SIMS management software. LabelBase can output data in virtually any label format you care to create - any number of labels across the page on any size of page. Any selected fields can be printed, as well as multiple copies of all or selected records. Although it's not the cheapest of the software here, for minimum fuss and maximum simplicity LabelBase gets my vote for label printing.

In a variety of ways the above programs improve productivity without costing an arm and a leg. The list is not exhaustive but reflects a nucleus of programs that I certainly couldn't do without.

INFORMATION

Products	*Font List & KeyCaps*
Supplier	*Design Concept* *30 South Oswald Road* *Edinburgh EH9 2HG*
Price	*£3.00 inc. VAT (Font List)* *£4.00 inc. VAT (KeyCaps)*
Product	*FontWay Supplier* *XOB* *Balkeerie, Eassie* *Angus DD8 1SR*
Price	*£16.00 ex. VAT*
Product	*KleinFS Supplier* *PTW Software* *72 Frosthole Crescent* *Fareham* *Hampshire PO15 6BG*
Price	*£17.95 inc. VAT*
Product	*Killer*
Supplier	*Pineapple Software* *39 Brownlea Gardens* *Seven Kings* *Ilford IG3 9NL*
Price	*£24.00 ex. VAT (joining + subscription)* *£20.00 ex. VAT (annual rejoining fee)*
Product	*ARMlock* *Supplier* *Digital Services* *9 Wayte Street* *Cosham* *Portsmouth PO6 3BS*
Price	*£35.00 ex. VAT*
Product	*Keystroke*
Supplier	*Quantum Software* *35 Pinewood Park* *Deans Livingston* *EH54 8NN*
Price	*£29.95 no VAT* *(site licence available)*
Product	*Label Base*
Supplier	*Digital Phenomena* *104 Manners Road* *Southsea* *Hampshire PO4 0BG*
Price	*£49.95 ex. VAT* *(site licence available)*

THE Risc PC IN EDUCATION

Much has been written in RISC User and elsewhere about Acorn's strategy in launching its new series of machines, and about its technical features and the advances which they represent over previous Acorn products. This article looks specifically at how schools and colleges contemplating buying new hardware might assess what became available with such a flourish of publicity in April.

Since that time, I have used a Risc PC with two groups of Year 10 pupils to explore some quite sophisticated and ambitious multimedia applications, and seen their reaction to the power and speed of the 9Mb machine. Indeed the use they have made of it has begun already to match some of Acorn's promises in the run-up to the launch.

MONEY

Schools never have enough money, so any system which enables them to make it go further has got to be a winner. For as little as £99 on top of the base prices any school buying a Risc PC can also have access to the world of PC software (DOS and Windows) as well as 99% of all RISC OS and a good deal of the older 8-bit resources as well: two computers for the price of one, in fact.

With the exception of those products designed to take specific advantage of the new screen modes and increased speed of the Risc PC, there is no need to spend time or money buying new software or retraining staff to use the operating system.

Significantly, the Risc PC has a clearly defined upgrade path. This applies to almost everything from the case through the addition of RAM to expansion cards and the higher performance CPUs. These are the famed ARM 7 and 8 families, which should become available for very reasonable prices in the near future.

To be able to add to and modify your machine effectively insures purchasers against the future and against kit becoming redundant as a result of changes to the basic hardware building blocks. This is not the case for anyone wishing to upgrade a 486 computer to a Pentium or later P6, for example, so schools buying a Risc PC now are effectively making an investment that will last (the comparison is particularly relevant when you consider that a Pentium second processor has been mooted for the future). It is also important to note that many of the extras which schools will want are so-called *industry standard* items (the SIMM chips used to expand RAM, for example).

SECURITY

Schools are all too often the target of both crime and unintentional damage by users. The Risc PC is both robust (its casing is made to riot shield specification) and lockable (padlocks at the back, a curved flap at the front). This means that machines (which can also be bolted to a desk) will at the same time deter those who mean ill and encourage those who have legitimate business inside the case.

EASE OF USE

First time users in particular, and young users generally will find the operating environment (RISC OS 3.5 and the desktop) easy to use. This is particularly important for reluctant colleagues who can be shown the advantages of the GUI (graphical user interface). There are a number of small enhancements to the operating system which make it even easier to conceptualise what is going on: a directory open icon, the "parcel" that symbolises a group of files being copied or moved and the much improved mode and colour pickers, for instance.

Some have regretted that Acorn did not take a bolder step and redesign the desktop and the interface in general; again, the modular design of the Risc PC means that when RISC OS 4 does come along, it will probably be easy to install and - like the OS supplied with the current machine - build on what teachers are already familiar with. Busy and at times demoralised teachers do not usually have the time or inclination to explore new systems. For them, the working environment of the Risc PC has much to recommend it.

POWERFUL PERFORMANCE

Pupils are already exposed to sophisticated graphics available on games machines, televisions and other computers. It has become increasingly important that they should have access to these themselves. Cruder machines lag far behind what they are used to from these other sources, but here is a really fast, slick and reliable Wimp system, that sponsors purposeful work, rather than slows it down. The Risc PC performs as well, for example in multimedia, as any other machine available for a comparable price in terms of speed and memory usage.

Perhaps for the first time, pupils will be able to embark on real multimedia authoring without having to wait an unacceptably long time for an image grab to be processed; Genesis pages can be presented with sophisticated graphics, culled almost seamlessly from an integrated high-speed CD-ROM drive (making full use of Photo CD). Watch out, too, for hardware MPEG developments soon; these should allow longer and faster video clips, improving on what are still only token movies.

Furthermore, those expansion cards necessary to extend pupils' use of graphics, sound and animation (all essential in a multi-sensory approach to learning) will soon be readily available, easy to fit and will probably conform, in software terms, to existing ways of working. This expandability will also be significant where peripherals support special needs.

NEW LITERACY

Acorn embarked earlier this year on the promotion of a radical new concept in suggesting competencies which pupils should possess to make the most of inevitable developments in technology now and in the future. The *New Literacy* proposes a much wider definition of managing and exploiting, in particular, the screen and its iconic and highly visual vocabulary. In many ways the Risc PC is ideally suited to demonstrating these new forms of communication.

PRIMARY

In addition, of course, to the wealth of high quality software suitable for key stages 1 and 2, it is now possible for younger children to integrate very realistic graphics into their work thanks to 24-bit sprites and the impressive high definition screen modes.

Software such as that inspired by speech technology (the talking word processors and stories, such as Sherston's) can now operate more fluently and realistically than ever. Animations - created perhaps by children looking at some aspects of science (the water cycle, say, or the functioning of simple machinery) - can operate up to twice as fast, more smoothly and more realistically.

These factors will all add to the experience that younger children need in exploring the world and modelling it.

SECONDARY

For students at key stages 3 and 4, there are two main features of the Risc PC over and above many of those that apply to primary: compatibility with other hardware platforms and high-end networking.

In the first place, those departments (most legitimately, perhaps, business studies) who believe that adherence to an *industry standard* way of working (DOS and Windows) is important, now have access to Windows applications that will run at speeds comparable with, if not superior to, applications on their native platforms. The PC compatible keyboard is also valuable in this context.

File interchangeability is already very good on the Acorn 32-bit machines. With the advent of Computer Concepts' MacFS, the platform is now more complete in this department than either of its rivals in education. With the way the PC co-processor has been designed and with the advent of OLE on both platforms, for many students achieving a task will become the focus of attention rather than the specifics of the system.

With the arrival of V.Fast modems later this year, the new 115 KBaud serial port will allow schools to save money by accessing more speedily the growing band of information providers such as Internet and the relaunched Campus 2000. It may be that the Risc PC will be able to offer the sort of graphic interface to Internet that Mosaic and its lookalikes do on the Apple and PC machines.

NETWORKING

The Risc PC has been designed with a particularly rich variety of inbuilt network interfaces, including Ethernet at one end and Access at the other. Few at this stage will want to consign their Risc PC to the role of file server, but as more and more machines appear in schools it will not be deemed such sacrilege to do so. The machine will make a worthy (i.e. speedy and reliable) high-end server for the most demanding network configurations across even quite wide areas - including, say a secondary school hub with efficient and effective links to feeder primaries for e-mail and administrative as well as curriculum tasks.

In many ways, the Risc PC is the machine schools have been waiting for. Much thought has clearly gone into meeting educational needs. You may be sure that whether upgrading existing stock or looking at Acorn for the first time, to buy a Risc PC is to buy wisely.

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What is SLEUTH?

Sleuth is an Optical Character Recognition (OCR) package which converts a scanned image of printed material (Sprite) into an ASCII file which may be further processed using a text editor or word processor. Sleuth is ideal for converting magazine articles, newspaper cuttings, legal documents, program listings, resource materials etc.

The best performance on Acorn systems

Sleuth can consistently achieve over 98% accuracy on good quality 300 dpi scanned images. Unlike other systems, Sleuth recognises a wide range of typefaces without the need for additional training. It has been trained on most popular fonts including the standard Postscript set, and recognises most other similar non-stylised fonts. The latest version now recognises bold typefaces too! Sleuth can handle typesizes between 9 and 24pt and can convert at up to 250 words per minute. Sleuth can handle slightly skewed images automatically, without extra ttraining.

Future development

Sleuth 1.5 is second release in a planned family of products that will take OCR on Acorn systems to full professional level. Future OCR products will be available as upgrades at reasonable cost.

NEW VERSION — 1.5

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- **Recognises Bold type**
- **Recognises more fonts**
- **Twain scanner support**

Fully multitasking operation

The scanned image in the input window is converted to ASCII and displayed in the output window from where it is saved. A 'reject' character is u for any unrecognised characters. Sleuth i fully multitasking allowing you to correc mistakes in the converted text while it is still converting the remainder. As you ed text, Sleuth will 'zoom in' on the appropriate part of the original image so that you can easily identify mistakes. Sleu cannot convert columns of text automatically, but allows a zone to be created around each column for conversion separately.

Equipment required

You will require a scanner that output high quality monochrome sprites. All scanners currently available for Acorn systems are suitable, but for best results your scanner should have a resolution of 300 dpi or greater. Sleuth now supports Twain which allows images to scanned directly. Drivers are available separately f a number of popular scanners. Please phone for details.

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A310/A400/A5000	
Mono Package with SCSI interface	**£579**
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Packages include a SCSI interface card which is required to connect the scanner. If you already have a SCSI card deduct £90 from the above prices. Deduct £39 if Sleuth not required.
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Take Command of your SWIs

Jonathan Hunt describes a special module that lets you issue SWI calls from the command line

Most programmers at one time or another will have wished there was a way to call SWI routines more easily, perhaps to test out an effect or to get information from the operating system. It is very easy to call SWIs from within programs, and even from within Basic (using the Basic keyword SYS), but unfortunately RISC OS doesn't provide a method of calling a SWI routine from the command line. The program presented here rectifies this.

WHAT THE PROGRAM DOES

The Basic program given in listing 1 creates and saves a Relocatable Module called *CLI_SWI* in the currently selected directory. When loaded, this Module adds two new star commands to the OS: **SWI* and **SYS*. Both commands do the same job (and call the same piece of code) so it doesn't matter which one you use, but Basic programmers will find it more natural to use *SYS while ARM code programmers will find *SWI preferable.

USING CLISWI

Type in the listing carefully and save it as a Basic program before running it (you could call the program *MakeCLISWI* if you want to give it a meaningful name). Once you have run the program to create the module, double-clicking on the module itself will install it (or you can include a line in your boot file to do this).

The commands work in a similar way to the Basic SYS keyword as far as parameter passing is concerned. The *SYS or *SWI command is followed by either the name of the SWI, enclosed in quotes, or the SWI number itself. This in turn is followed by the parameters to be passed to the SWI, separated by commas. Numbers may be passed in hexadecimal if they are preceded by a "&" character. If you want to pass a string as a parameter, you must enclose it in quotes. As with the Basic SYS keyword, if you pass a string as one of the parameters, it is stored in a buffer and the pointer to this buffer is passed instead. Values returned by the SWI are stored in the system variables R$0 to R$7.

As an example of how to use *SWI and *SYS, here's how to call the same SWI routine using all three methods:

Basic

```
    SYS "OS_File",17,"MyFile"
```

Assembly Language

```
    MOV R0,#17
    ADR R1,filename
    SWI "OS_File"
    ...
    .filename
    EQUS "MyFile"+CHR$(0)
```

Using CLI SWI

```
    *SWI "OS_File",17,"MyFile"
```

or

```
    *SYS "OS_File",17,"MyFile"
```

HOW THE MODULE WORKS

When either of the commands is issued, the first thing the module has to do is make a copy of the parameter string so it can be processed. As it is copied, commas are replaced by ASCII 1 and quotes by ASCII 2. This allows them to be used as end of string terminators while still allowing them to be distinguished from each other. The first parameter, the SWI identifier, is then processed. If this is a number it is converted from the parameter string using "OS_ReadUnsigned". This SWI has the added bonus of translating hexadecimal numbers if the & character is present. If the identifier is a name, it is converted into a number by "OS_SWINumberFromString".

Once the SWI number is known, it is turned into the actual SWI machine code instruction by adding &FF000000. Then, to make sure it doesn't produce any errors when called, it is turned into the "X" form by adding &20000. The instruction is then stored just before the end of the code, where it will be executed later on.

The next job to be done is to load registers R0-R7 with the passed parameters. They are not loaded directly because some of the registers need to be used as counters in the processing loop, so they are held in a block of memory for later transfer. The parameters are processed in order. If a parameter is a number it is stored as it stands. If it is a string then the pointer to that string is stored. After all the parameters have been processed and stored in memory, they are loaded into R0-R7.

The last job to be done is to scan the copied parameter string, and replace any instances of character 1 or 2 with character 0. This is done in case any fussy SWI routines need zero as an end of string terminator.

Now everything is set up, the SWI instruction can be executed. If any errors occur while executing the SWI, the V flag will be set, and when the module returns control to the OS, the error will be handled automatically. If no errors occur, the returned registers are stored back in memory and are then copied one by one into the system variables R$0 to R$7 before the module returns control to the OS.

```
   10 DIM module% 1024
   20 PROCassem
   30 SYS "OS_File",10,"CLI_SWI",&FFA,,m
odule%,module%+P%
   40 END
   50 :
   60 DEFPROCassem
   70  FOR pass%=4 TO 6 STEP 2
   80   P%=0
   90   O%=module%
  100   [OPT pass%
  110   EQUD 0
  120   EQUD 0
  130   EQUD 0
  140   EQUD 0
  150   EQUD title
  160   EQUD help
  170   EQUD commands
  180 .title
  190   EQUS "CLI_SWI"+CHR$(0)
  200   ALIGN
  210 .help
  220   EQUS "CLI SWI"+CHR$(9)+CHR$(9)+"
1.00 ("+MIDS(TIMES,5,11)+")"+CHR$(0)
  230   ALIGN
  240 .commands
  250   EQUS "SWI"+CHRS(0)
  260   ALIGN
  270   EQUD swi
  280   EQUB 1
  290   EQUB 0
  300   EQUB 1
  310   EQUB 0
  320   EQUD swisyntax
  330   EQUD swihelp
  340   EQUS "SYS"+CHR$(0)
  350   ALIGN
  360   EQUD swi
  370   EQUB 1
  380   EQUB 0
  390   EQUB 1
  400   EQUB 0
  410   EQUD syssyntax
  420   EQUD syshelp
  430   EQUD 0
  440 .swi
  450   STMFD R13!,{R7-R11,R14}
  460   MOV R2,#0
  470   ADR R1,buffer
  480 .transferloop
  490   LDRB R3,[R0,R2]
  500   MOV R4,R3
  510   CMP R3,#44
  520   MOVEQ R4,#1
  530   CMP R3,#34
  540   MOVEQ R4,#2
  550   STRB R4,[R1,R2]
  560   ADD R2,R2,#1
  570   CMP R2,#256
  580   BGE endtransfer
  590   CMP R3,#32
  600   BGE transferloop
  610 .endtransfer
  620   MOV R4,#0
  630   SUB R2,R2,#1
  640   STRB R4,[R1,R2]
  650   LDRB R3,[R1,#0]
  660   CMP R3,#2
  670   BNE number
  680 .name
  690   ADD R1,R1,#1
  700   MOV R9,R1
  710   SWI "XOS_SWINumberFromString"
  720   LDMVSFD R13!,{R7-R11,PC}
  730   MOV R10,R0
  740   B loadregs
  750 .number
  760   MOV R9,R1
  770   MOV R0,#0
  780   SWI "XOS_ReadUnsigned"
  790   LDMVSFD R13!,{R7-R11,PC}
  800   MOV R10,R2
  810 .loadregs
  820   LDR R11,swiaddr
  830   AND R11,R11,#&FF000000
  840   ORR R11,R11,R10
  850   ORR R11,R11,#&20000
  860   STR R11,swiaddr
  870   MOV R8,#0
  880   MOV R11,#0
  890   ADR R12,regs
  900 .loadloop
  910   LDRB R3,[R9,R8]
  920   ADD R8,R8,#1
  930   CMP R8,#256
  940   BGE endload
  950   CMP R3,#2
  960   BGE loadloop
  970   CMP R3,#0
  980   BEQ endload
  990   LDRB R3,[R9,R8]
 1000   CMP R3,#2
1010   BNE regnumber
1020 .regstring
1030   ADD R7,R9,R8
1040   ADD R7,R7,#1
1050   STR R7,[R12,R11]
1060   ADD R11,R11,#4
1070   CMP R11,#32
1080   BLT loadloop
1090   B endload
1100 .regnumber
1110   MOV R0,#0
1120   ADD R1,R9,R8
1130   SWI "XOS_ReadUnsigned"
1140   LDMVSFD R13!,{R7-R11,PC}
1150   STR R2,[R12,R11]
1160   ADD R11,R11,#4
1170   CMP R11,#32
1180   BLT loadloop
1190 .endload
1200   MOV R2,#0
1210 .charloop
1220   LDRB R3,[R9,R2]
1230   MOV R4,R3
1240   CMP R3,#2
1250   MOVLE R4,#0
1260   STRB R4,[R9,R2]
1270   ADD R2,R2,#1
1280   CMP R2,#256
1290   BGE endchar
1300   CMP R3,#0
1310   BGT charloop
1320 .endchar
1330   LDMIA R12,{R0-R7}
1340 .swiaddr
1350   SWI 0
1360   LDMVSFD R13!,{R7-R11,PC}
1370   ADR R12,regs
1380   STMIA R12,{R0-R7}
1390   ADR R0,varname
1400   ADR R1,buffer
1410   MOV R2,#4
1420   MOV R3,#0
1430   MOV R4,#1
1440   ADD R5,R0,#2
1450   MOV R6,#48
1460   MOV R7,#0
1470 .returnloop
1480   STRB R6,[R5]
1490   ADD R6,R6,#1
1500   LDR R8,[R12,R7]
1510   STR R8,[R1]
1520   SWI "XOS_SetVarVal"
1530   ADD R7,R7,#4
1540   CMP R7,#32
1550   BNE returnloop
1560   LDMFD R13!,{R7-R11,PC}
1570 .swihelp
1580   EQUS "*SWI calls a SWI routine."
+CHR$(13)+"Syntax: *SWI "+CHR$(34)+"<SWI
 name>"+CHR$(34)+"|<SWI number>,r0,r1,r2
..."+CHR$(0)
1590 .swisyntax
1600   EQUS "Syntax: *SWI "+CHR$(34)+"<
SWI name>"+CHR$(34)+"|<SWI number>,r0,r1
,r2..."+CHR$(0)
1610 .syshelp
1620   EQUS "*SYS calls a SWI routine."
+CHR$(13)+"Syntax: *SYS "+CHR$(34)+"<SWI
 name>"+CHR$(34)+"|<SWI number>,r0,r1,r2
..."+CHR$(0)
1630 .syssyntax
1640   EQUS "Syntax: *SYS "+CHR$(34)+"<
SWI name>"+CHR$(34)+"|<SWI number>,r0,r1
,r2..."+CHR$(0)
1650   ALIGN
1660 .varname
1670   EQUS "R$0"+CHR$(0)
1680   ALIGN
1690 .regs
1700   EQUD 0
1710   EQUD 0
1720   EQUD 0
1730   EQUD 0
1740   EQUD 0
1750   EQUD 0
1760   EQUD 0
1770   EQUD 0
1780 .buffer
1790   ]
1800   FOR fill%=0 TO 63
1810     [OPT pass%
1820     EQUD 0
1830     ]
1840   NEXT
1850  NEXT
1860 ENDPROC
```

Important Announcement

You may have noticed that in this issue the name of RISC Developments has been dropped from the magazine. Unfortunately RISC Developments Ltd was forced to cease trading on 8th August 1994 as a result of losses associated with the production of Beebug magazine during the last year of its life.

RISC User magazine and the software and hardware products previously produced by RISC Developments will now be part of BEEBUG Ltd. This will not affect the magazine in any way, and the only changes you will see are those that we had already planned to make the magazine even better.

PC Forum

This month Gordon Gilmore has a few useful hints and tips.

Having survived for 13 issues, our *PC Emulator Survival Guide* has amply proved its point! With the advent of the Risc PC, Acorn users can now enjoy a real PC rather than a mere emulation, so we felt the time has come to open out our PC pages a little and invite readers with experience of both platforms to contribute ideas which may help other readers to cope with the PC world when the necessity arises.

DOS 6.X UPDATE

Such is the market penetration of Microsoft that whenever DOS is mentioned we assume that means MS-DOS. Perhaps we shouldn't. Nowadays there are other players in the field. IBM have recently issued PC-DOS 6.1 and Novell, new to the operating system field, have jumped a version number by releasing Novell DOS 7.0.

In RISC User 6:9 we looked at MS-DOS 6.0 and the new features available. Almost as soon as this was released it became apparent that there were problems with it. In particular, using DoubleSpace could have serious consequences. Magazines featured letters from poor souls who had converted their complete hard disc to a DoubleSpaced compressed drive which, some time later, was found to have a corrupted directory structure. Not much fun! The problem was eventually attributed to physical hard disc faults which were blithely ignored by DoubleSpace.

Another problem was the disc cacheing used by MS-DOS 6.0. If you were a bit too speedy in switching off the machine after quitting a program (or worse still, didn't quit to DOS before switching off) data not written to disc from the cache would be lost. These matters were put right in MS-DOS 6.2. DoubleSpace now checks the integrity of the disc before creating a compressed drive and checks data integrity before writing to the drive. The cacheing problem has been solved by ensuring that the DOS prompt doesn't appear until the write cache has been cleared (if you really want to lose data you can still switch off before the prompt appears!).

Although regarded as only a technical upgrade, DOS 6.2 also included one or two other useful improvements. A disc analysis and repair program, called ScanDisk, is included and, to help diagnose problems, you can now step through your AUTOEXEC.BAT file during boot-up in the same way as stepping through the CONFIG.SYS file, introduced with DOS 6.0. Also welcome is the fact that compressed floppy drives are automatically mounted by DOS 6.2 and any compressed drive can now be (in Microsoft-speak) decompressed (or in English, expanded). If you already have DOS 6.0 you can buy an upgrade to 6.2 from the Microsoft Upgrade centre for £10 (plus VAT).

PAUSE FOR THOUGHT

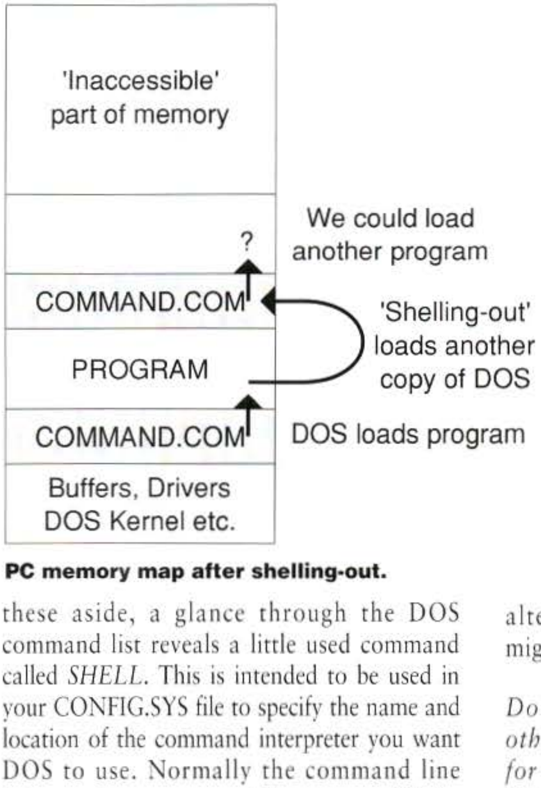
A.J. Whitehead from Bath wrote to me some time ago, requesting assistance in getting his coloured prompts to appear at the correct time. The problem, which others may have experienced, tends to manifest itself when ECHO OFF commands, or the @ at the start of a line, are used to suppress screen output. The mysterious characters we put into the PROMPT command string to set the display colours, and the like, must pass, via ANSI.SYS through the display drivers and must, therefore, appear on the screen to take effect. If you are having problems in getting a coloured prompt to take effect put ECHO ON just before the PROMPT command.

TIMING PROBLEM

Mr Whitehead also reported a potential timing problem with the Aleph PC486 board during disc accesses. It would appear that when the board passes over control to the external filing system (for example the ADFS or SCSI filing system) it loses immediate contact with the Archimedes clock which, in effect, stops the DOS clock. The moral is clear: don't rely on the DOS clock for timing purposes if disc accesses are likely during the timed period.

SHELLING OUT

In the DOS world, the word *SHELL* can crop up in all sorts of places. At one level, shells are programs which protect us from the nitty-gritty of DOS by providing a user-friendly means of handling files and certain other simple maintenance tasks. Before MS-DOS 5 came along with DOSSHELL the field was occupied by third party utilities such as PC-Shell. Leaving these aside, a glance through the DOS command list reveals a little used command called *SHELL*. This is intended to be used in your CONFIG.SYS file to specify the name and location of the command interpreter you want DOS to use. Normally the command line interpreter you would use would be COMMAND.COM found in the root directory. Since this is the default we usually don't bother with the SHELL command. Presumably, there are are people around who need to write custom command line interpreters and this is for them.



PC memory map after shelling-out.

Another place where you might find a SHELL command is in QuickBasic. In this context SHELL allows you to perform DOS commands from within programs. For example, in QBASIC (and other DOS based Basics) the instruction:

```
SHELL "DIR"
```

would print a current directory list on the screen (this is equivalent to the RISC OS Basic commands *. or *OSCLI* "."). If you use the instruction without a following command, SHELL will take you right outside QuickBasic and you will find yourself in DOS. No need to panic - this is not *back* in DOS. What has happened is that *another* copy of DOS (strictly speaking) is loaded on top of QuickBasic and you are using that (see the diagram). Many programs - spreadsheets, word processors, editors etc. - have an option within them to do this. The buzz word is 'shelling-out'. Once 'shelled-out' you can perform all the usual DOS operations - even running another program, from which you could shell-out again. Bear in mind, though, that you will soon run out of memory. It is surprisingly easy to forget that you have shelled-out, try to run another program and suddenly get an 'Out of memory' message.

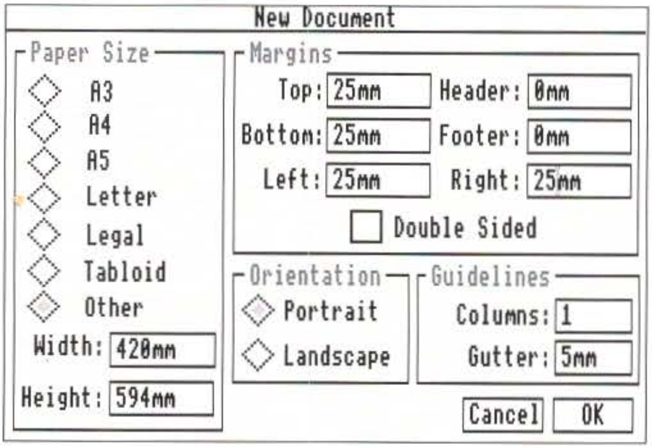
How do you return to the program? Simply type *EXIT* and press Return and you should find yourself safely back within the program. One word of caution - while shelled-out don't alter anything which the program itself might need.

Do write to us if you have any hints or other information that might be suitable for the PC Forum. This could cover both PC use in general and interaction with RISC OS in particular. While we have no intention of turning RISC User into a PC magazine, we are aware that many readers need to use both systems, and often need to transfer files between the Acorn and the PC environments. Hints relevant to the Risc PC will be particularly welcome (when the DOS card finally appears!).

Getting the best from Ovation

This month Maurice Edmundson looks at the printing of posters, news-sheets and other large documents in Ovation.

Ovation can handle very large documents - in the region of 90cm square, although I usually prefer to stick to "A" sizes between A2 and A5. Of course, how large a size you can print depends on your printer, and in what follows I am assuming the maximum it can take is an A4 sheet. This means larger documents will have to be made up of A4 sheets pasted together, a process sometimes known as "tiling".



Paper Size:
- ◇ A3
- ◇ A4
- ◇ A5
- ◇ Letter
- ◇ Legal
- ◇ Tabloid
- ◆ Other

Width: 420mm
Height: 594mm

Margins:
Top: 25mm
Header: 0mm
Bottom: 25mm
Footer: 0mm
Left: 25mm
Right: 25mm
☐ Double Sided

Orientation:
- ◆ Portrait
- ◇ Landscape

Guidelines:
Columns: 1
Gutter: 5mm

Figure 1. The new document dialogue box

It is also necessary to know how close to the margins your printer can print. In my case it is about 8mm on all four sides. On some dot matrix printers the side margins may go down to a few millimetres. but the top and bottom margins on single sheets may be as much as 25mm. The point at issue is that you must design your poster or news-sheet in such a way that you constrain your print area within the limitations set by your printer.

From the Ovation icon bar menu, selecting *New Document* will bring up the dialogue box as shown in Figure 1.

A2 is not one of the pre-figured sizes, so highlight the "other" button and type in 420mm wide by 594mm high. For a poster of this size one can choose margins all round of 25mm without any header or footer, and portrait orientation with only 1 column. When you select *OK* the blank document will fill the screen. Just how much of it you can see depends on the screen mode you are using. If possible use a mode where you can see the full width of an A4 sheet. If you now view the document at 50%, the full width of the A2 document will be visible on screen.

Show the rulers and add guidelines 210mm along the top and 297mm down the side. These divide the sheet into four equal quadrants and represent the four A4 sheets which you will print and paste together to make up the full poster. From the *View* menu select *Show Margins* and immediately the screen will turn grey except for one quadrant which will remain white. This is the quadrant which will be printed. By default it will probably be the lower left quadrant which is highlighted. This highlighted area can be moved to any other quadrant from the *Print setup* dialogue box (*File* menu) by entering other values for *Corner X* and *Corner Y*.

To bring the print area to the upper left quadrant, enter X=-3mm, Y=-297mm (for starters) and click on *OK*. Now carefully modify these values until the white area just touches the vertical and horizontal centre lines as shown in Figure 2. Make a note of the values and repeat the process for the remaining three quadrants. You then know the X and Y values for all four quadrants.

You will now want to select the various type faces and sizes which will be required in the poster or news-sheet. These can be named in the *Para. Style* dialogue box and the document saved as a stylesheet for safety and for future use. Prepare the poster using guidelines and text frames (or picture frames for a logo or illustration) to assist with the layout. You might find it easier to hide the margins for the time being. Remember that the centre guidelines will be where the pages are joined so keep this region as simple as possible. Don't worry, though, if a large letter is sliced in two.

This will even help with the alignment when the pages are pasted together.

When you are satisfied with the layout, show the margins once again, and bring the highlighted area to the top left quadrant. Print this section. Repeat for the other three quadrants using the X/Y coordinates previously noted. You will have four pages of print of which Figure 3 shows sections A and D. Sheet A should have its right and lower margins about 5mm wide. Trim if necessary. Section D will require the top margin trimmed off completely as indicated and its right margin trimmed to 5mm for another overlap with section C.

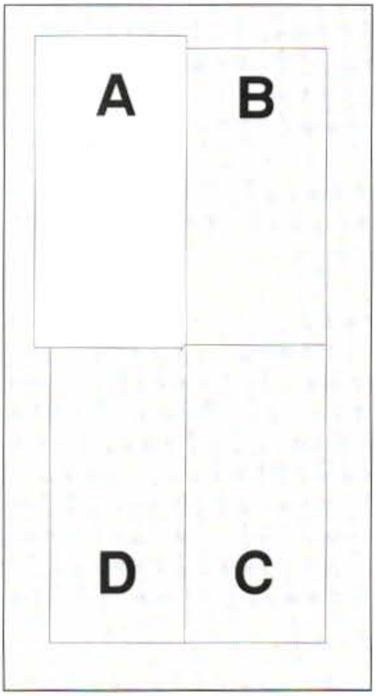


Figure 2.
Aligning the print area for the upper left quadrant

The principles are fairly obvious. All four sheets can now be pasted together to make the finished poster. With care a seamless join can be achieved along every edge.

In the case of a news-sheet, the main text will be set in columns. These can be added in the *New document* window, or directly onto the page. If the latter, divide the page width into four or six allowing 5 or 6mm for the gutters. Add guidelines at the appropriate positions across the page and snap text frames to these. This helps when joining the sheets, since the vertical join will coincide with a gutter. The final poster will be slightly less than A2 in size because of the margins which have been overlapped or trimmed off. Of course if you required the finished poster to be exactly A2 size, you would start with an oversize document page to compensate for the trimmed edges.

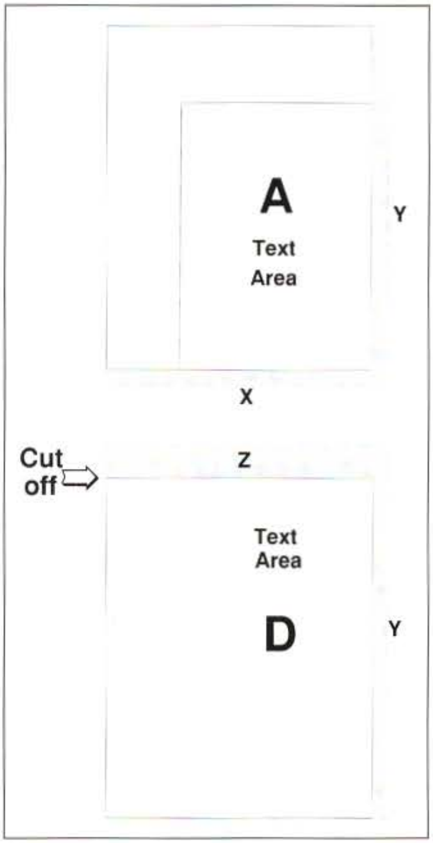


Figure 3.
Two of the four pages which make up the poster

Making an A3 size poster is probably easiest of all, using two A4 pages in landscape position, and following the method outlined above.

When making fine adjustments to the layout of headings and text in your document, the manual kerning and tracking facilities which Ovation provides can be a great help.

C Notebook

David Spencer takes over the chair for this month's regular round up of C hints and tips.

ALLOCATING STORAGE

Perhaps one of the most common mistakes made by programmers new to C is to declare a pointer to an object when in fact they needed to declare the object itself. This is particularly common when passing pointers to functions. For example:

```
int *data;

void process_number(int *number) {
         ... body of function }

*data = 100;
process_number(data);
printf("Result is %d/n", *data);
```

This all compiles correctly, but will most probably crash on execution because 'data' is never actually set to point to a place in which an int can be stored. Bugs like this can be very hard to track down.

The correct method would have been to declare 'data' as an int, and then to replace '*data' (twice) by just 'data', and 'data' by '&data'. This will keep all the pointer logic correct, but the declaration of 'data' will now actually create a hole into which an int can be stored.

EXECUTION PROFILING

One seldom used feature of Desktop C is the ability to produce a profile of how many times each line of code in a program is executed. This can be useful in locating areas that could profitably be optimised. To use profiling, the 'Profile' option in the compiler's menu must be turned on. Your program should then be modified to include a call to either '_mapstore()' or '_fmapstore("filename")' before completion. This will either display, or save to the named file, the execution profile, which is in the form of a line number followed by the number of times the line was executed.

One point to note is that to use profiling, your program must be linked with 'ANSILib' from Clib.o as well as with the Stubs file. Also, profiling slows execution down so don't leave it on in final versions!

USING wimpt_Checkmode

The 'wimpt' module of RISC OS_Lib provides some useful functions that can be used within redraw code to read details about the screen mode. However, for any of these to work, it is vital that the redraw code calls the function:

```
BOOL wimpt_checkmode(void)
```

each time it is invoked. This forces 'wimpt' to re-cache its stored information.

'wimpt_checkmode()' returns True if the mode has changed since the last call, and False otherwise.

A NEW C?

Acorn are working, in conjunction with ARM Ltd, on both a new version of the C compiler and also a new Desktop Development Environment, including a much improved version of DDT and a new template editor which makes the creation of 3D dialogue boxes much easier. The new C, release 5, offers improvements both in compilation time, and also speed and size of the compiled code.

A beta-test form of the product has already been released to registered developers who use C, but there is as yet no word as to when the final product will be released to the public.

On a similar note, Acorn are working to replace the functions of RISC OS_Lib by a set of calls provided by relocatable modules. This has the advantage of being language independent.

If you have any hints or queries on C programming, do write to us at RISC User.

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Both drivers are multi-session PhotoCD compatible — they can also play standard audio compact discs and for added security the magazine can be locked into the drive.

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The package includes the drive and Computer Concepts drivers, manual, all cables, PC & Mac drivers and a free copy of Computer Concepts ArtWorks clip-art CD (containing over 700 examples of work created in ArtWorks, dozens of 24bpp photographs, a demo version of AudioWorks and some sample audio files).

DRM-604X: £999.00 + £10 carriage + VAT (£1185.57 incl.)

DRM-602X: £499.00 + £10 carriage + VAT (£598.07 incl.)

Both drives are suitable for any model of Acorn RISC computer with an Acorn compatible SCSI interface. They require CDFS 2.2 (contact your SCSI board supplier if you require an upgrade).

The 604X — *MacWorld 'Editor's Choice for the Best Performer' July '93; PC Magazine 'Editor's Choice for Networks' Dec '93; PC Computing 'Most Valuable Product for Multimedia Hardware' Dec '93; BYTE Magazine 'Award of Merit' Jan '94; Personal Computer World 'Best CD-ROM Drive' Feb '94; Personal Computer World 'Editor's Choice' April '94*

Computer Concepts Ltd

Into the Arc: A Masked Ball

By Mike Williams

In my article in this series in RISC User 7:1 I described a method of creating a stencil, based on text, which could then be overlaid on a picture so that the image was visible through the letters of the stencil. What I was trying to illustrate at the time was the extent to which imaginative use of Paint and Draw combined could create effects that neither of these applications was capable of on its own.

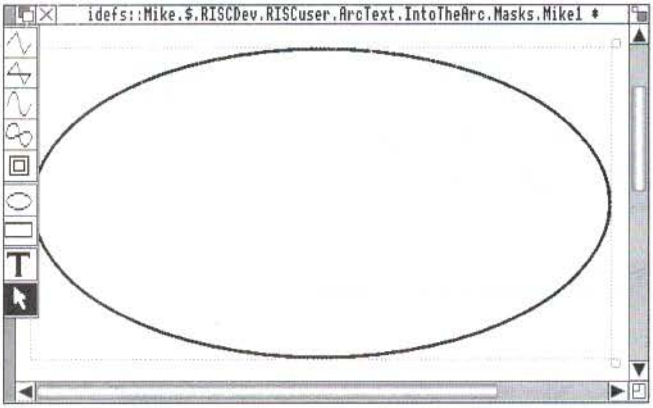

idefs::Mike.$.RISCDev.RISCuser.ArcText.IntoTheArc.Masks.Mike1 *

Figure 1. The initial ellipse created in Draw ready to be grabbed and dragged into Paint.

What I had to say in that article inspired RISC User reader Terry Nottle of Bishops Stortford. He has adapted my original idea to provide a whole library of masks, which you can use in a similar way, and these are included on this month's magazine disc. They are mostly based on geometrical shapes, and the benefit of Terry's work is that these masks come in very handy in any DTP work where you want to present an illustration in a more interesting frame than the normal rectangular one. The technique is therefore applicable to DTP packages like Impression and Ovation, which can import both sprites and Draw files.

The technique for producing masks for use in this way is not really that complicated once you know how, so it is worth spending some time going over the rudiments of the process. Then, if you have reason to need an alternative to the masks supplied in Terry's library, you can easily set to and make up a mask of your own. As always, the description takes longer to read than the tasks being described!

CREATING YOUR OWN MASKS

Let's look at how we would go about creating a simple elliptical mask. We will assume in this case that we have a particular image (sprite) which we wish to crop to an elliptical shape. We will further assume that all the work is to be accomplished using Paint and Draw alone - alternative approaches are possible where Impression, Ovation or similar are involved, which I'll mention later.

Drag your sprite image into a new Draw window. Then select the ellipse drawing tool and drag out an ellipse of the size and shape required to suit the image. Remember that an ellipse starts from its centre, and that the drag then determines its shape and 'radius'. If you don't get it right first time, either delete the resulting object and try again, or use the bottom right-hand 'ear' (which is visible once you have selected the ellipse) to change its shape and size to suit. Once the outline ellipse is complete, select the ellipse by clicking on it, and drag it away from the sprite to an empty area of the Draw window. While the ellipse is still selected, use the *Style* option of Draw's menu to set the line width to 2 units - we need to make sure we have a really solid boundary for subsequent fill operations in Paint. That's stage one complete (see figure 1).

Make sure that Paint is loaded on the icon bar. Back in the Draw window click outside the ellipse's bounding box so that this red rectangle disappears. Click with the Menu button over Paint's icon on the icon bar, select the *Snapshot* option, click on 'OK', and drag out a rectangle to enclose your ellipse. When the Save box appears, drag the sprite icon directly down to Paint on the icon bar, and the sprite file window will open showing a miniature version of the ellipse. Double click on this, and from Paint's main menu, select first *Show tools* and then *Show colours* from the *Paint* option.

Select black as the colour, and the *Fill* tool, and click inside the ellipse, producing a solid black ellipse - this gets rid of the border, assuming we don't want one. From Paint's main menu select *Edit* and then *Mask*. You will now find that the *Colours* window can be pulled down (or scrolled) to reveal a seventeenth 'colour' which is the mask (or transparent) colour. Select this, and in the *Tools* window select *Global* (and check the *Fill* option is still selected). Click inside the ellipse to fill this shape with the transparent colour (see figure 2). This process can take a considerable time to complete, so be patient - it also pays to make sure the ellipse is correct before you start!

Once this process is finished, the ellipse will now look a shade of grey. By using Paint's *Save* option, drag the mask (in sprite format) back into the Draw window containing the original image. By positioning the mask over this image, adjusting as required, the final result can be achieved (see figure 3).

If you are working with the likes of Impression or Ovation, then simply create two graphics frames which can eventually be positioned one (the mask) over the other (the picture), making sure that the background 'colour' of the mask frame is set to 'transparent'. Drag the picture sprite into its frame, and the mask into the mask frame, and slide one over the other, again resizing and rescaling as required.

Once you begin to get the hang of this process then all sorts of possibilities open up. In our example, the mask has no visible border, and the area outside of the mask is white (thus usually invisible). Both of these could be changed, with a suitable border being created in Draw, say, and an outer colour being applied in Paint. The possibilities are enormous.

USING THE MASK LIBRARY

Terry Nottle's library provides eighteen different masks, and should certainly give you ideas on other masks which you might want to create for yourself. These masks are supplied as a set of sprites embedded in a single Draw file. To try one out, load a picture sprite into Draw, and open the mask library (by double-clicking on its icon, or by dragging the file into Draw). Make sure that the *Select* tool is activated in the mask library window and click over the mask to be used (a red dashed bounding rectangle should just about be visible).

From the Draw menu, use the *Save* option, and by moving right, the *Selection* option, and drag the Draw icon from the *Save* box into the Draw window containing the picture. Provided the selected mask is positioned over the picture the effect of the mask should be clear.

You can, of course, resize the mask within Draw, but if you do this other than by quite a small amount you will see the potential disadvantage of pixel-based images. When sprites are magnified, what were smooth images become much more jagged. You will find you get the best results by creating a mask as close as possible to the final size you will need. The same consideration applies to the use of Impression or Ovation, but as before picture and mask can be positioned independently. And in Impression Publisher you would also be able to create an irregular frame which would reasonably follow the outer contours of the mask. In other DTP packages the same result can usually be achieved, but by much more tedious manual efforts.

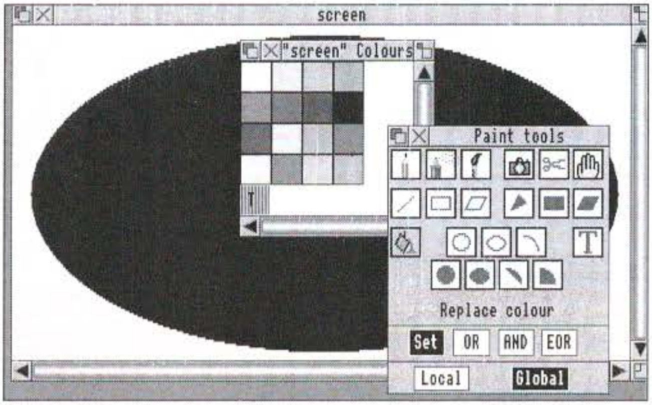


Figure 2. The ellipse in Paint about to be filled - note choice of mask colour, and global fill.

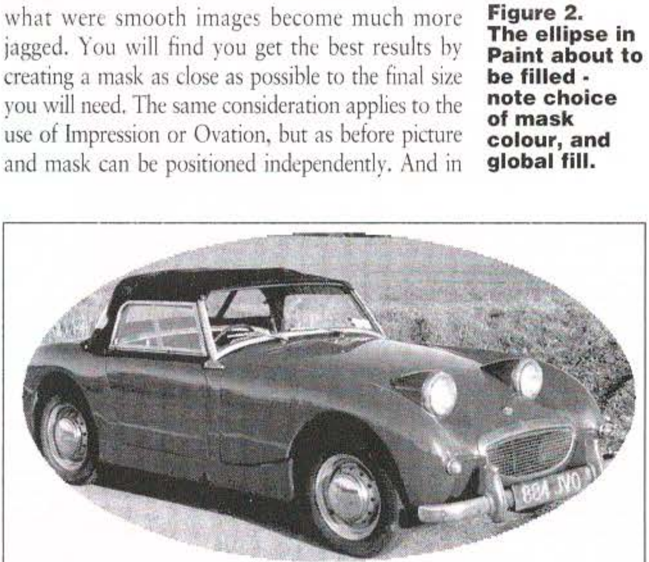


Figure 3. The resulting elliptical mask overlaid over a picture.

Well there we are. Once again I hope the illustrations tell the story more succinctly than do my words, and show just how powerful the combination of Paint with Draw can be.

RISC *user* Public Domain Library

Our Public Domain discs contain as near as possible to 800k (and not less than 700k). Each disc includes a 'Read Me' file, and instructions are included with the programs. The discs are offered as seen and are available to RISC User members only for the price of just £1.60 each.

PDZ1 **FontMgr** (font manager), **FYEO** (displayer for GIF and JPEG files), **Mole** (molecular models), **Process** (image processing for 256-colour sprites)

PDZ2 **BeepError** (assign sounds to error messages), **FontsPlus** (font manager), **MiniHound** (cut down dictionary and thesaurus based on WordHound), **Saviour** (auto-save facility), **Quitter** and **TaskKill** (both for terminating active tasks)

PDZ3 **Image** (image processing up to 24-bit resolution), **MultiScrn** (up to ten different Desktop displays), **Palette** (mode changer, Desktop clock, Screen saver, etc.)

PDZ4 **Examine** (magnifier Desktop display), **TemplEd** (template editor), **QMC** (quick mode changer)

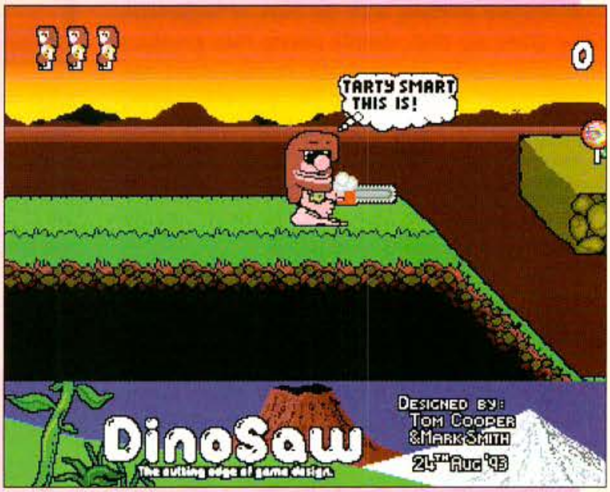
PDZ5 Set of three discs containing GNU **C** and **C++** compilers (available only as a set of three discs for £4.80 inclusive of VAT, p&p)

PDZ6 Set of five discs containing the full **WordHound** suite of dictionary plus thesaurus (available only as a set of five discs for £8.00 inclusive of VAT, p&p)

Many of the games on these discs were described in more detail by Simon Burrows in his PD survey, Select and Collect, published in RISC User 7:6.

PUBLIC DOMAIN SPECIAL COLLECTION

PDX1	**Draw Plus**	Extended Draw
	Label	Label printing
PDX2	**AddressD**	Address labels
	AGP	Advanced graph plotter
	Daily	Screen clock
	Draw Cross	Crossword generator
	Memphis	RAM filing system
PDX3	**ArcFS**	Decompression utility
	Risc BBS	Bulletin Board system
	Impulse II	Inter-task communication
PDX4	**ArcFS**	Decompression utility
	PVray	Ray tracing
PDX5	**Hangman**	Classic game
	Interface	Classic Wimp display
	Menus	Wimp menu editor
PDX6	**SuperGram**	Sophisticated anagram finder
PDX7	**365 Days**	Thought of the day
	Dissi	Disassembler
	Eazicopy	Disc copier
	FileTree	Analyses directories
	FileUtils	Icon bar utilities
	GateKeeper	Virus protection
	IconMatch	Pelmanism game
	Interfero	Virus protection
	Links	Software application links
	Manager	Disc indexing
	Menon	Application launcher
	PackDir	File compaction
	QMC	Mode change utility
	Scanner	Virus protection
PDX8	**AIM**	Image processing
PDX9	**Process**	Image processing applications
	Translator	
	Creator	
	GreyEdit	
PDY1	**Powerbase**	Database Management
PDY2	**Out to Lunch**	Screen saver
	KeyWindow	On-screen keystrip
	TemplEd	Template editor
	Menon	Application launcher
	BlibII	Basic V library management
PDY3	**Zap**	Text editor
	ArmSI	Speed indexer
	ArcTools	50 star commands
	Glazier	Template editor
PDY4	**DemoFX**	Graphical effects
	Tertis	Classic game


0
TARTY SMART THIS IS!
DinoSaw
The cutting edge of game design.
Designed by: Tom Cooper & Mark Smith
24th Aug '93

PDY5	**Dinosaw**	Game
PDY6	**Son of Gyrinus**	Game
PDY7	**Lemmings**	Game
PDY8	**Games Collection 1** BallGame, PV_Life, Racer, ShootEmUp, MineHunt, Billion, PlanetLand, Darts, TaiPei	
PDY9	**Games Collection 2** Yatzy, Solitaire, NoughtEx, MastMind, Bloxed, CTetris, Merrills	

The software on PDX1 to PDX5 was described in RISC User 5:7 (June 1992), PDX6 and PDX7 were covered in RISC User 6:3 (Jan/Feb 1993), PDX8 in RISC User 6:7 (June 1993), PDX9 in RISC User 6:9 (Aug/Sep 1993), and PDY1 to PDY4 in RISC User 6:8 (July 1993), and PDY5 to PDY9 in RISC User 7:3 (Jan/Feb 1994).

Please note that all prices quoted are for **UK orders only**.
Overseas customers please add the cost of p&p as follows:

	Europe, Eire	Americas, Africa, Mid East	Elsewhere
First disc	£1.00	£1.50	£1.70
Subsequent discs	50p	75p	85p

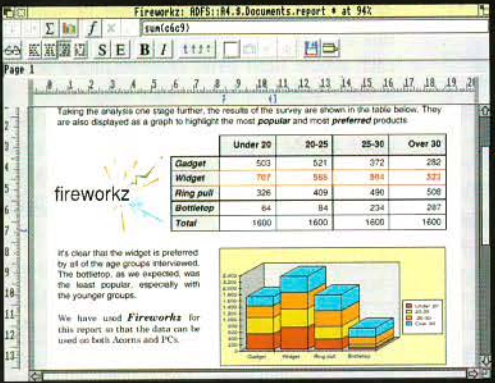
A full list of PD software is available in return for a SAE from Beebug Ltd, 117 Hatfield Road, St Albans, Herts AL1 4JS

£149 worth of Fireworkz for £99

Until September we're doing a very special offer for Fireworkz. Over the summer period we've reduced the price from £149 to £99. You can buy a secondary site licence for £396 instead of £596.

Fireworkz

Our superb integrated program which incorporates the Wordz wordprocessor and Resultz spreadsheet really is easy to use. The wordprocessor and spreadsheet share the same controls so that once you've learned one you know the other. The table editor in the wordprocessor is second to none and you can include spreadsheet calculations inside the table. To make a live graph you just swipe the figures in the table with the mouse and press the graph button. We've never seen editing formulas any simpler either: adding up numbers is just a point and click operation.



Taking the analysis one stage further, the results of the survey are shown in the table below. They are also displayed as a graph to highlight the most ***popular*** and most ***preferred*** products.

	Under 20	20-25	25-30	Over 30
Gadget	503	521	372	282
Widget	707	586	504	523
Ring pull	326	409	490	508
Bottletop	64	84	234	287
Total	1600	1600	1600	1600

It's clear that the widget is preferred by all of the age groups interviewed. The bottletop, as we expected, was the least popular, especially with the younger groups.

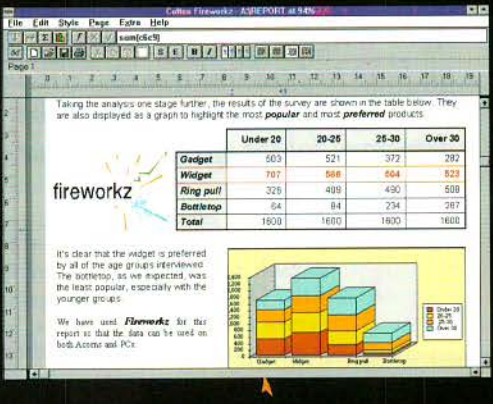
We have used ***Fireworkz*** for this report so that the data can be used on both Acorns and PCs.

Recordz & Fireworkz Pro

Fireworkz Pro is coming later this year. This incorporates Recordz, the next major piece in the jigsaw: it's a fast and friendly database with card layout, searching and sorting. It uses DataPower format files amongst others, shares Fireworkz' wonderful user interface and can exchange data with the spreadsheet.

COLTON software

2 Signet Court, Swann's Road,
Cambridge, CB5 8LA.
Tel 0223 311881
Fax 0223 312010
Email: info@colton.co.uk



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Fireworkz for Windows is now available

We've spent the last few months on the next stage in the Fireworkz project: the Windows version. This is now available, also at the special price of £99. If you already have the RISC OS version, you can add the Windows version for £50. If you have both Acorns and PCs you can now work on your files on either machine. You can even use the same floppy disc. Fireworkz for Windows can load Lotus, Excel and RTF files. Fireworkz is the only choice, if you plan to buy PCs in the future.

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ClassCardz

In conjunction with Bretton Woods School, we've been developing teaching cards for Wordz and Resultz. These are now available for £20. You get a set of A4 laminated cards which you can photocopy. These take you through the first steps with Wordz and Resultz: creating and editing documents in a wordprocessor and spreadsheet.

They're a must for all teachers.

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? TECHNICAL QUERIES

Alan Wrigley answers your questions on how to find out if a specific task is running, and how to replace the directory folder sprite with your own

Q *Dear Sir I have been plagued recently by problems when switching on my A540. Instead of the normal display telling me that RISC OS is initialising, all I get is a black screen with an error such as "Abort on instruction fetch at...". This often happens several times before the machine will boot up as normal.*

Karl-Heinz Fleischmann

A It sounds from your description as though you are suffering from faulty connections. In a perfect world, all the various circuit boards and expansion cards that sit inside the computer would be connected together firmly by well-designed connectors, and signals would pass between them happily ever after. Unfortunately, connectors do work loose over a period of time, and become dirty and prone to intermittent contact. In a few cases poor design encourages this to happen, for example with expansion boards that don't fit tightly into the backplane socket, or whose earthing circuitry is inadequate. If there is a poor or intermittent contact somewhere at power-on, this can lead to problems such as those you describe.

The A540 is prone to similar problems with its processor board, and extra memory boards if fitted. I recently had a problem with my hard drive not being accessed properly. I thought the drive was at fault, but in fact all that was needed was a quick wiggle of the processor board in its socket. It looked firm enough beforehand, but after wiggling it around and pressing it firmly down, the problem disappeared. This illustrates how critical the connections are between various parts of the computer.

I suggest that you remove the cover from your machine (having first removed the mains lead!) and make sure that all the connectors are fully pushed together. Likely culprits are any expansion boards that may be fitted, but while you're inside the computer it's worth checking all the other connections as well - for example, my floppy drive failed to work recently because the connector had worked loose. You may find it helpful to spray switch cleaner on the contacts before reassembly.

Q *Dear Sir The new PRM describes the instruction set for the Floating Point Emulator, but gives no details on how floating point numbers can be displayed from within a machine code program. Can you explain how to do this?*

Martin Dale

A The FPE instructions can handle floating point numbers in five different formats. These are single, double and extended double precision, and packed and expanded packed decimal. The latter two formats are provided to aid the process of inputting and outputting floating point numbers via screen and keyboard. The extended packed decimal format was not available on older FPEs, so we will concentrate on packed decimal. If you store a number in memory using this format, it is stored in three words (12 bytes), each nibble (half byte) representing a decimal digit in the number or some other information. The first word holds the sign nibble, four nibbles which make up the exponent, and the first three digits of the number. The other two words hold the remaining 16 digits. The format is shown below:

Sign	e3	e2	e1	e0	d18	d17	d16
d15	d14	d13	d12	d11	d10	d9	d8
d7	d13	d5	d4	d3	d2	d1	d0

Bit 3 of the sign nibble holds the sign of the result, while bit 2 holds the sign of the exponent. So if the result sign is set, you first need to print a minus sign. The decimal point is assumed to start between the first two digits of the number, i.e. after d18, and the exponent indicates how many places to shift it. Assuming that you want to print the number as a signed value, then if the exponent is positive, the decimal point must be shifted right by the number of places indicated, while if it is negative, it must be shifted left and padded with leading zeros. Get the value of the exponent by reading each nibble in turn, e3 being the most significant. If the exponent is negative, print "0." followed by the required number of zeros, then output each digit of the number starting with d18 to the required number of places. If it is positive, start printing from d18, placing the decimal point where indicated by the exponent.

If you want to print the number in exponential notation, all you need do is print it using the following format:

```
    <sign bit 3>d18"."d17..d0"E"<
sign bit 2>e3..e0
```

WRITE-BACK

SETTLING THE SCORE

I must disagree with Chris Drage (RISC User 7:7) that Sibelius 7 is head and shoulders above other music typesetting programs. It is unfortunate that he does not even mention the only serious contender, which is PMS. This was the only program for the Arc capable of typesetting music to a professional standard before Sibelius came along and I have been using it for a long time with complete satisfaction. I have recently also acquired Sibelius 7, but haven't so far found anything it can do that PMS can't, though I think PMS may prove more flexible in allowing you to step outside the rules where required and giving you full manual override if necessary. They both have their strengths and weaknesses, and it looks as if some things will prove easier with one than the other. Chris Drage particularly mentions multi-scores and extracting parts, and PMS can do this with ease too.

The main advantage of PMS is that the music is input as an ordinary text file, so you can use Edit or any word processor. It's quite possible for two or more people to work on a score simultaneously without a site licence. You can load and edit an ASCII file created on another machine. I do typesetting for a friend who only has a PC and we find this works very well. You can't do that with Sibelius. Also I can do some work during my lunchtime using a laptop - the small monochrome screen doesn't make a graphics-based system easy to use, but it's a doddle with text.

I hope this will correct the clear inference to be drawn from Chris Drage's article that Sibelius is the only professional music typesetting program for the Archimedes, because that just isn't true.

Michael Wright

When reading any review or comment on a piece of software, it's always necessary to bear in mind that it's a very subjective business. We all have our own way of looking at and assessing things - we wouldn't be human if we didn't. Nevertheless, Mr Wright has some very valid points to make about PMS in his letter, and if we feel there is sufficient interest among RISC User readers we would be happy to commission a comparative review of Sibelius and PMS at some stage. In the meantime, if you would like further information about PMS, contact Philip Hazel at 33 Metcalfe Road, Cambridge CB4 2DB, tel. 0223 65518. PMS was reviewed in RISC User 6:6.

BEGINNERS OF THE WORLD UNITE

I have always found RISC User very useful but have always thought that there is a need for a graduated course of instruction written in a step-by-step manner. With the advent of the Risc PC it would be just the right time to do it.

Glynne Ellis

Watch this space (or one quite like it - see this month's editorial) ....

TAKE A BOW

In his review of Rhapsody 3 (RISC User 7:2) Richard Hallas stated that bowing marks for string instruments could not be obtained. I use Rhapsody 3 (version 3.01) and I can confirm that bowing marks can in fact be obtained.

Govind Kharbanda

SIMPLE WORDS

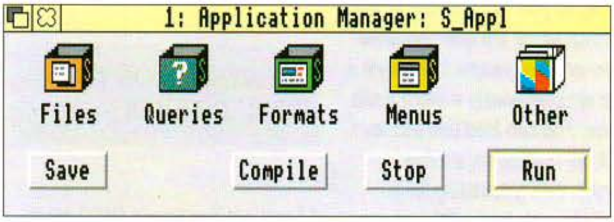
A number of readers have responded to R.B. Camp's plea in RISC User 7:7 for a simple word processor. Peter Miles and Clive Bell both recommended Minerva's EasiWord, while C.A. Martin put in a good word for Arnor's Protext. Iain King has been an enthusiastic user of Wordwise since its early days on the BBC micro, and he suggested using the Archimedes version, WordwiseA+. Michael Taylor agreed with Mr Camp that a new version of Interword was required, and passed on the following note smuggled out by Interword: "Give me freedom! Break down the walls of my prison! Unlock cell 6502. Reincarnate me in the RISC paradise!"

Certainly EasiWord would seem to meet the requirements stated by Mr Camp - quick and simple to use, no fancy frills and the ability to print in text mode. It's also inexpensive, readily available and works happily in the RISC OS environment.

The only Programmable Database that you don't have to program.

Introducing SAM — the S-Base Application Manager.

SAM makes the most powerful RISC OS database also the easiest to use. Absolutely no programming is required — just drag in a CSV file and two clicks later you can have a working database. No matter how demanding your data processing needs, S-Base 2 will provide the total solution.



Also new in S-Base 2:

- Natural language Query by Example (QBE) for superfast access to data.
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- Greatly enhanced documentation, with a new quickstart guide.
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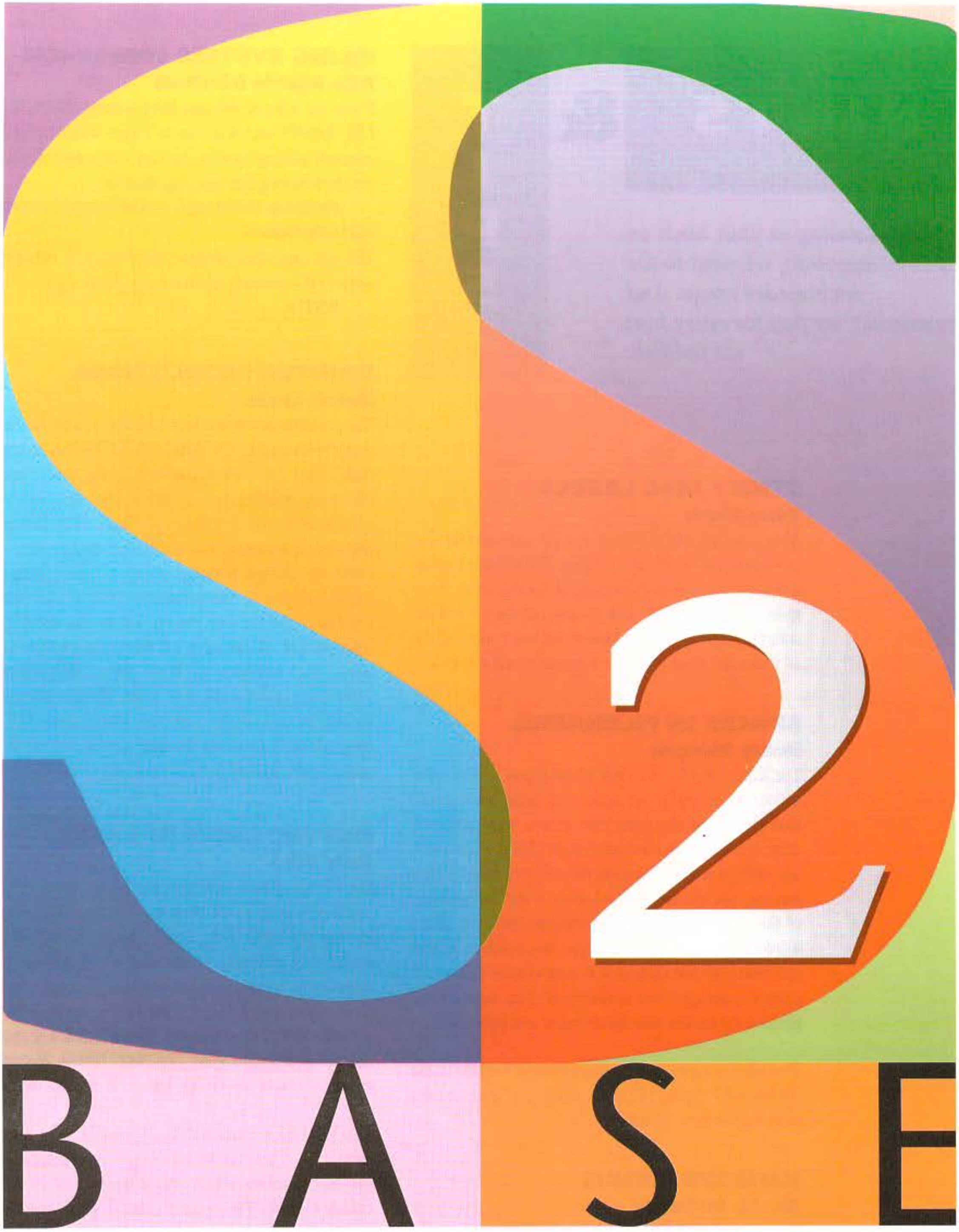

S-Base 2 Personal Edition — £129 • S-Base 2 Developer Edition — £249
Upgrades available to registered S-Base users.
For further product information, please contact us.

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HINTS & TIPS

Keep sending in your hints on anything relevant to the Archimedes range. And remember, we pay for every hint we publish.

STICKY DISC LABELS

Tony Shew

After removing a label from a disc, the surface of the disc can sometimes be left sticky. Spray WD40 onto a tissue and wipe gently over the surface of the disc case. Never spray directly onto the disc as some of the oil will get onto the magnetic surface. Ensure that you remove all the oil with a dry tissue otherwise a new label will not stick.

SPACES IN FILENAMES

Henry Morgan

The RISC OS Filer does not allow spaces in filenames, and yet occasionally you notice that some other people have got around this restriction. In fact, what they have done is to use a so-called *hard space* (ASCII 160). There are several ways to access this. If you have Chars running, you can see the hard space in the third column of the sixth row. To enter a character from the Chars window into a transient dialogue box (such as a Save box) you can't just click on it as normal since that would cause the dialogue box to disappear. You must instead position the pointer over the character and press Shift.

Two other ways to get a hard space are to hold down the Alt key while typing 160 at the numeric keypad, or even more simply press Alt-Space.

ICONISED MENUS

Dr. M. Richards

If you have a window which has been iconised on the pinboard, then clicking Menu over that icon will open the standard pinboard menu. However, if you hold down Shift while clicking Menu, what you get is the window's own menu, i.e. the one which would have been seen if the window had been open. This facility can often enable you to perform functions on the window without having to de-iconise it first.

FILING SYSTEM CONFUSION

Atle Mjelde Bårdholt

If you use a lot of different filing systems (ADFS, SCSI, CFS, RAMFS etc.) it is easy to forget which one is the currently selected system. An easy way round this is to put the following line into your boot file:

```
     SetMacro CLI$Prompt <FileSwitch$Current
FilingSystem>:>
```

This will cause the command line prompt to include the name of the currently selected filing system, e.g.:

```
     SCSI:>
```

PRINTER RESOLUTIONS

Derek Lucas

The performance of my Star XB24/10 printer has been much enhanced by the RISC OS 3.1 Printers upgrade (RISC User 7:6 disc), particularly in the colour mode. However, printing at 360x360 is very slow and also greedy with ink! For most purposes 180x180 grey dithered is adequate and nearly five times faster. To make the change between the two easier, drag the LQ860 driver to the printer control panel twice. Configure the top one, which will be the default, to 180x180 and add the suffix LR (for low resolution) to its name. Then configure the lower one to 360x360 with 250 colours and add HR to its name. The two icons now sit side by side on the icon bar, where either can be selected when required. Further resolutions could be added by configuring more incarnations of the driver.

DOTTED LINES IN BASIC

Jack Pike

DRAW x,y draws a continuous line from the present graphics position to the point x,y. The equivalent dotted line can be drawn using PLOT 21,x,y. The default dot setting sets alternate pixels on and off, giving what appears as a faint continuous line. To get a more recognisable dotted line, the dot pattern needs to be set with the VDU 23,6 command. To set dashes and spaces four pixels long use VDU 23,6,%11110000|. Note that the last character is a vertical bar not a 'one'.

The VDU 23,6 command has a total of eight further parameters. These can be used to give more complicated dot-dash patterns which repeat using more than the default 8 pixels. The repeat number of pixels can be up to 64 and can be set by:

```
     *FX 163,242,n
```

where *n* is between 0 and 64. For example:

```
     MODE 12
     VDU 23,6,%11111100,%00110000|
     *FX 163,242,16
     MOVE 0,0:PLOT 21,500,500
```

draws a dot-dash line with a 16-pixel repeat pattern.

MOUSE BRAKE

Alan Wrigley

The default mouse step setting for RISC OS 3.1 is 3 (this value being the one that most users find preferable). This is ideal for moving the pointer around the screen quickly without losing control over its position. However, at this setting the pointer does not always move consistently by a pixel at a time; sometimes the tiniest movement of the mouse causes the pointer to jump two pixels or more. Most of the time this is not a problem, but if you are performing a delicate task, such as dragging an icon's bounding box in FormEd so that it aligns to a specific position, it can be very frustrating if you can't position the pointer accurately. In this case a mouse step of 1 is much more reliable.

How do you change the step quickly and simply? Using *Configure is no good since it has no effect until the next reset, and although the Configure application acts instantly it's a bit inconvenient having to have it installed and the window open. Equally, you don't want to have to quit the desktop and drop into Basic to issue a MOUSE STEP command every time you need to change.

There are two quicker ways. Firstly, if you keep a permanent task window open with Basic running, as suggested in *Using the RISC OS Task Window* (RISC User 6:6), then you could program two function keys with MOUSE STEP 1 and MOUSE STEP 3. Alternatively, you could keep two small Basic programs on your pinboard for the task (named perhaps *MouseSlow* and *MouseFast*). All these need contain is one line:

```
    MOUSE STEP n
```

where *n* is the required step value.

HANDS-FREE PRINTING FROM MULTIPLE APPLICATIONS

Tony Shew

If you want to print a selection of files from different directories or different applications, first drag their icons onto the pinboard, then select them and drag the selection to the printer manager on the icon bar. This method means that the computer can get on with the job of printing the whole lot while you have a cup of tea.

ICONISER BUG

M. Whiteman

I have found what appears to be a bug in RISC OS 3.10. If you click on a window's Close icon with Shift held down, the window is iconised as you would expect. If you then re-open that window by a method known to the program (e.g. clicking with Select on the icon bar icon as with Palette or Configure), the window reappears but the iconised window is still on the pinboard. Clicking Shift-Menu in this icon still offers all the menu options as normal. This can cause confusion, and I have not been able to find a solution.

OVATION & HEARSAY DISC SPACE ECONOMY

David Pilling

You can make Ovation use less disc space by deleting one of the files !RunImage or !RunImageS. The latter is the spell check version and is loaded on machines with more than 1Mb of memory. Normally only one of the files is used, so you may delete the one that is not appropriate for your machine.

You can make Hearsay use less space by deleting unused modem drivers (held in the directory !Hearsay.Driver) and keeping only one of the following files: Hearsay (RISC OS 2 only), HearsayA5D (A5000 with RISC OS 3.00) and HearsayA5 (RISC OS 3.1 or greater).

USING CFS

Geoff Scott

Having used Computer Concepts' CFS for some time, I have found that while some files could be compressed, there were others that I wanted to remain untouched. The only way to handle this was to use the ADFS Filer alongside the CFS Filer, and this led to a confusing and cluttered desktop.

However, there is a way around this problem. Compressed files can be forced to execute from the ADFS Filer by making use of the run-type variable. The following command should be inserted into the !Run file for CFS, in place of the original command (RISC OS 3 only):

```
    Set Alias$@RunType_D96 Filer_Run CFS#%*0
```

From here onwards, with CFS installed, compressed files can be double-clicked from the ADFS Filer. The Filer will then prefix the pathname with *CFS#* and execute the file. CFS will pick this up and the file will be run. The pathname of the file will still contain the CFS# prefix, so it can be saved again in compressed format, say from Edit, in the normal way. Non-compressed files will not be prefixed, and will therefore remain uncompressed.

Applications can be run in this way too. Also, files can still be dragged to the icon bar to be executed, but you cannot drag a compressed file into a document.

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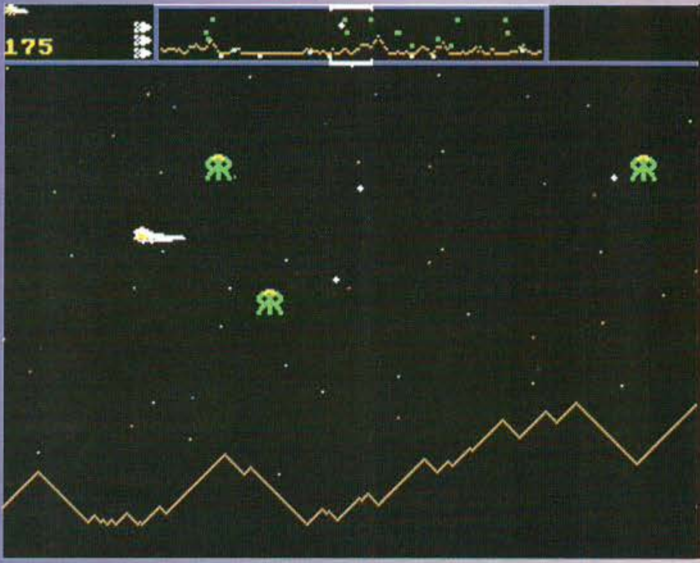
RISC user disc

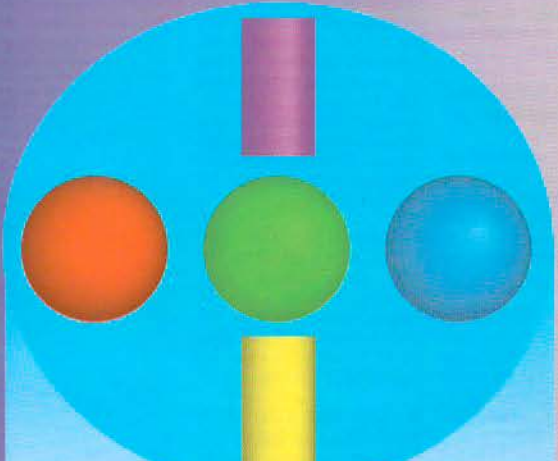
August/September 1994



Humanoids

by Gary Lee

Remember Defender, one of the all-time classics of the arcade? Or the BBC micro version, Planetoid? Well now you can play it in all its glory on your Archimedes! The author of Planetoid has rewritten the game for RISC User, and it's a cracker! All the original features are there - just watch the aliens gang up on you as you pilot your craft furiously across the face of the planet in a desperate attempt to save the humanoids!



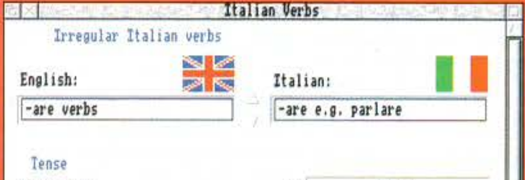
Graphics on the Risc PC

by Lee Calcraft

Our article on page 20 shows you just what you can do with the Risc PC when it comes to experimenting with the extraordinary graphics capability of the new machine. *RiscClrs* will whet your appetite by providing all the examples given in the program. So if you want to create a green lozenge, just suck it and see.

Italian Verbs

by Alan Grace



Italian Verbs

Irregular Italian verbs

English: -are verbs

Italian: -are e.g. parlare

Tense

● Present
○ Imperfect
○ Passo Remoto
○ Future
○ Conditional
○ Present Subjunctive
○ Imperfect Subjunctive

io	parlo
tu	parli
lui/lei/Lei	parla
noi	parliamo
voi	parlate
loro	parlono

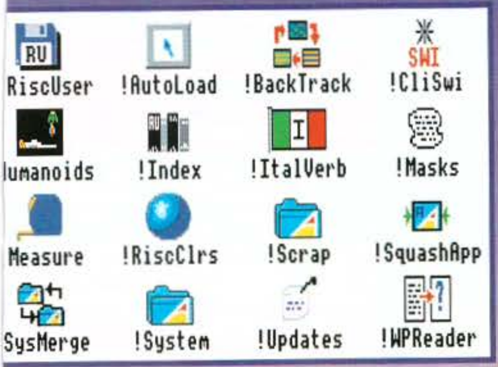
Imperative

(Tu) parla
(Lei) parli

Perfect

ho parlato

Brush up on your Italian verbs with our handy little program *ItalVerb*. It gives you all the information you need to translate many common verbs from English into Italian, including complete conjugations for all tenses. So next time you fly over to Milan for a new suit, you can look up the Italian for "owe" ... followed perhaps by "cry".

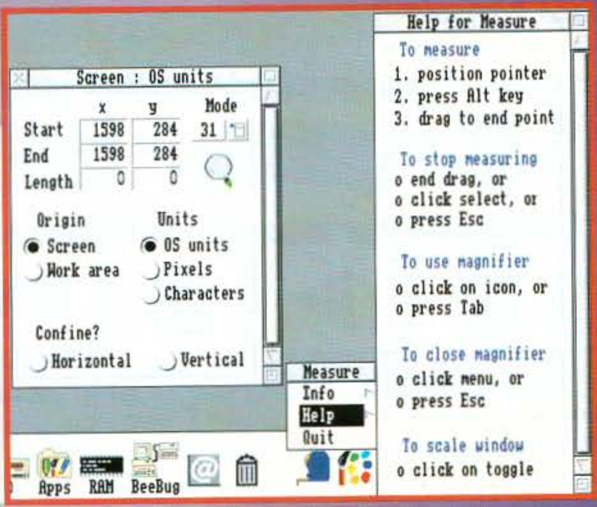


Packed with useful applications, the disc costs just £4.75 inc. VAT. Please add £1 p&p.

Tape Measure

by Graham Crow

Not Italian suits, but screen coordinates. *Measure* allows you to measure the coordinates of a rectangle on the screen very easily, just by dragging it out with the mouse. You can measure in OS units, pixels or text characters, making it useful for positioning icons accurately in a window or counting characters in a line of text, as well as many other uses. The application also includes a handy screen magnifier.



Screen : OS units

	x	y	Mode
Start	1598	284	31
End	1598	284	
Length	0	0	

Origin: ● Screen ○ Work area

Units: ● OS units ○ Pixels ○ Characters

Confine? ○ Horizontal ○ Vertical

Help for Measure

To measure
1. position pointer
2. press Alt key
3. drag to end point

To stop measuring
o end drag, or
o click select, or
o press Esc

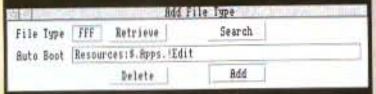
To use magnifier
o click on icon, or
o press Tab

To close magnifier
o click menu, or
o press Esc

To scale window
o click on toggle

Automatic File Loader

by Andrew Benson



Add File Type

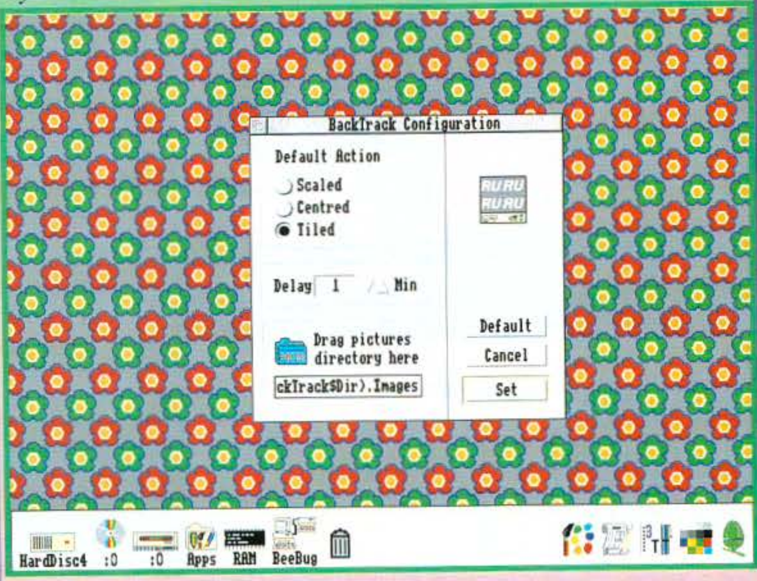
File Type FFF

Auto Boot Resources:$.Apps.!Edit

In order to run a file by double-clicking, a runtype variable needs to be set up. For most filetypes this is done when the Filer first sees the parent application. This usually involves either opening up lots of directories until you find the application, or (with RISC OS 3) cramming your boot file with Filer_Boot commands for all the applications you might ever want to use. Either way, it takes time - often lots of it! But with *AutoLoad* installed everything is much simpler. Once it has been told what filetypes to look out for (and the list can be saved as a default), whenever one of these is double-clicked it will load the parent application for you.

Backdrop Carousel

by Matt Harris



BackTrack Configuration

Default Action
○ Scaled
○ Centred
● Tiled

Delay 1 Min

Drag pictures directory here

ckTrack$Dir).Images

Many users like to have a backdrop picture on their pinboard, but after a while staring at the same old snow-topped mountain gets boring. *BackTrack* provides the perfect solution - it relieves terminal boredom by cycling through a selection of backdrop pictures at random intervals. The pictures can be tiled or scaled, allowing you to use a wider range of images on your backdrop.

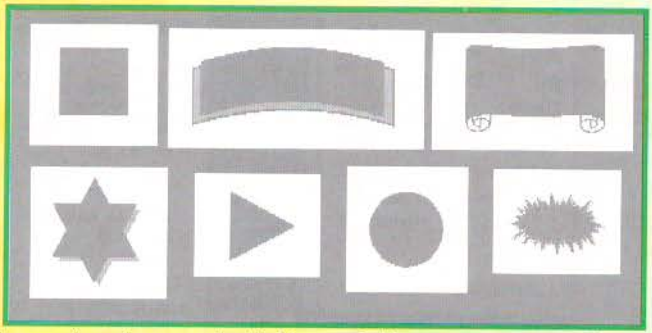
Continued overleaf

RISC disc user
August/September 1994

Continued from previous page

DTP Masks

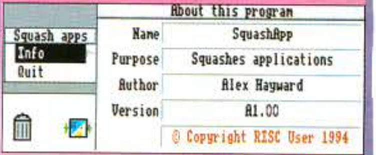
by Terry Nottle



A library of masks created with Draw, which you can use to make your DTP illustrations more interesting. The technique is described in *Into the Arc* on page 54.

Application Compressor

by Alex Hayward



About this program

Name	SquashApp
Purpose	Squashes applications
Author	Alex Hayward
Version	A1.00
	© Copyright RISC User 1994

The largest file within an application is usually its !RunImage, and compressing this can often save quite a bit of disc space. Unfortunately, you have to uncompress it again before the application can be run. But not any more! Just drag your application to *SquashApp*, and not only will it compress the !RunImage file, but also set up your application so that running it in future will automatically decompress the file on the fly. So squashed flies - sorry, files - will never be a problem again.

Updates to previous discs

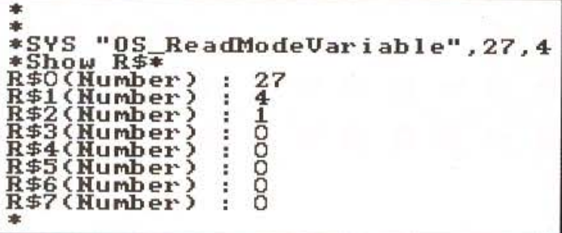
An amended !Run file for Flag Day (RISC User 7:8), and version 1.57 of the ColourTrans module for use with the new printer drivers (RISC User 7:6)

ArcScan Data

ArcScan index for this month's RISC User.

SWIs from the Command Line

by Jonathan Hunt

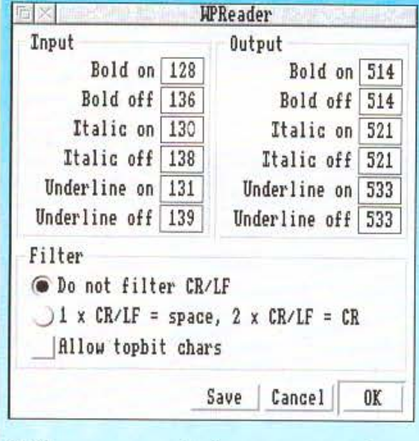


```
*
*
*SYS "OS_ReadModeVariable",27,4
*Show R$*
R$0(Number)  : 27
R$1(Number)  : 4
R$2(Number)  : 1
R$3(Number)  : 0
R$4(Number)  : 0
R$5(Number)  : 0
R$6(Number)  : 0
R$7(Number)  : 0
*
```

If you're a programmer (or even if you're not) you've probably found it annoying that there's no easy way to issue a SWI call without loading up Basic. *CLI SWI* enables you to issue SWIs from the command line - just hit F12 (not too hard...), type your SWI call, and get an instant result. The program is fully described on page 45.

Use Ovation with Style

by Ian MacDougall



Input		Output	
Bold on	128	Bold on	514
Bold off	136	Bold off	514
Italic on	130	Italic on	521
Italic off	138	Italic off	521
Underline on	131	Underline on	533
Underline off	139	Underline off	533

Filter

● Do not filter CR/LF

○ 1 x CR/LF = space, 2 x CR/LF = CR

☐ Allow topbit chars

If like us you regularly prepare text in an editor such as DeskEdit before transferring it to Ovation to be laid out, you will sometimes be frustrated that there is no way to transfer style information such as italics or bold. *WPReader* overcomes this by reading a text file and depositing it into an Ovation document complete with style information. You can set up the parameters yourself so that it can cope with a wide range of possible single-character style information codes. It also works with Impression Style and Publisher as well as any other applications that recognise specific keypresses as style codes.

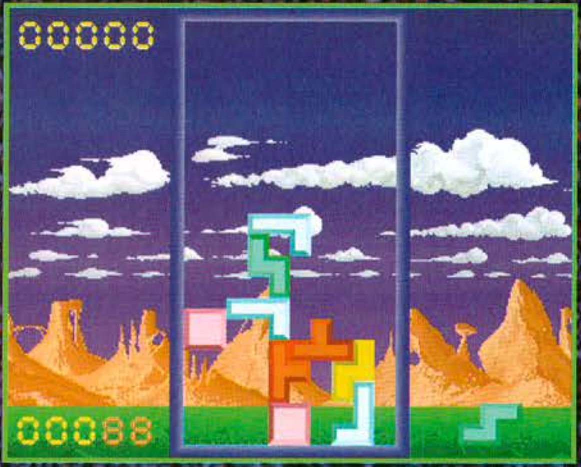
RiscAction!

a special games collection from 32-bit Action to get your fingers tapping and your mind racing!

RiscAction is a collection of seven super games ranging from exciting shoot-em-ups to desktop brain-teasers. Each of these games is a gem in its own right, and we are offering all seven for the incredible price of £14.95!

Remember Defender, one of the all-time classic arcade games? Now the game has been brought bang up to date for your Acorn computer with **Humanoids**. All the original features are there - just watch the aliens gang up on you as you pilot your craft furiously across the face of the planet in a desperate attempt to save the humanoids!

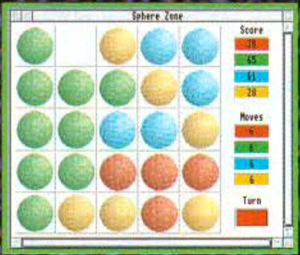
As if this were not enough action for one disc, **Robotix** is written by the same author as Humanoids, and so promises the same high level of excitement. The action is fast and furious as you dash about the screen rescuing other humans from murderous alien robots with your multi-directional laser weapon!



Cretin is an excellent implementation of Tetris, one of the most popular computer games ever written. This version has a very impressive scrolling background and a soundtrack that is sure to drive you mad!

Shells is a game for two players, who take it in turns to fire shells across a random landscape in an attempt to destroy their opponent's cannon. Super graphics and a high skill factor make this a game with a difference!

When you need a breather, try **Wrangler**, which is a super desktop implementation of one of the most addictive forms of Patience ever devised. Be warned - once you start you will find it hard to stop!



Sphere Zone is a challenging game in the same mould as the board game Othello. Four players (human or silicon!) take turns to place spheres on the board in an attempt to score points by making lines of their own colour. A very entertaining game for the individual or the whole family!

Boffin is a high-quality graphical ladders-and-levels-type adventure game containing dozens of puzzles that must be completed in the right sequence. Can you guide the professor to safety, avoiding the acid drops, baddies and glass beakers? Get caught in a glass beaker and there is no escape!

RiscAction is available now for only **£14.95** (inc. VAT).

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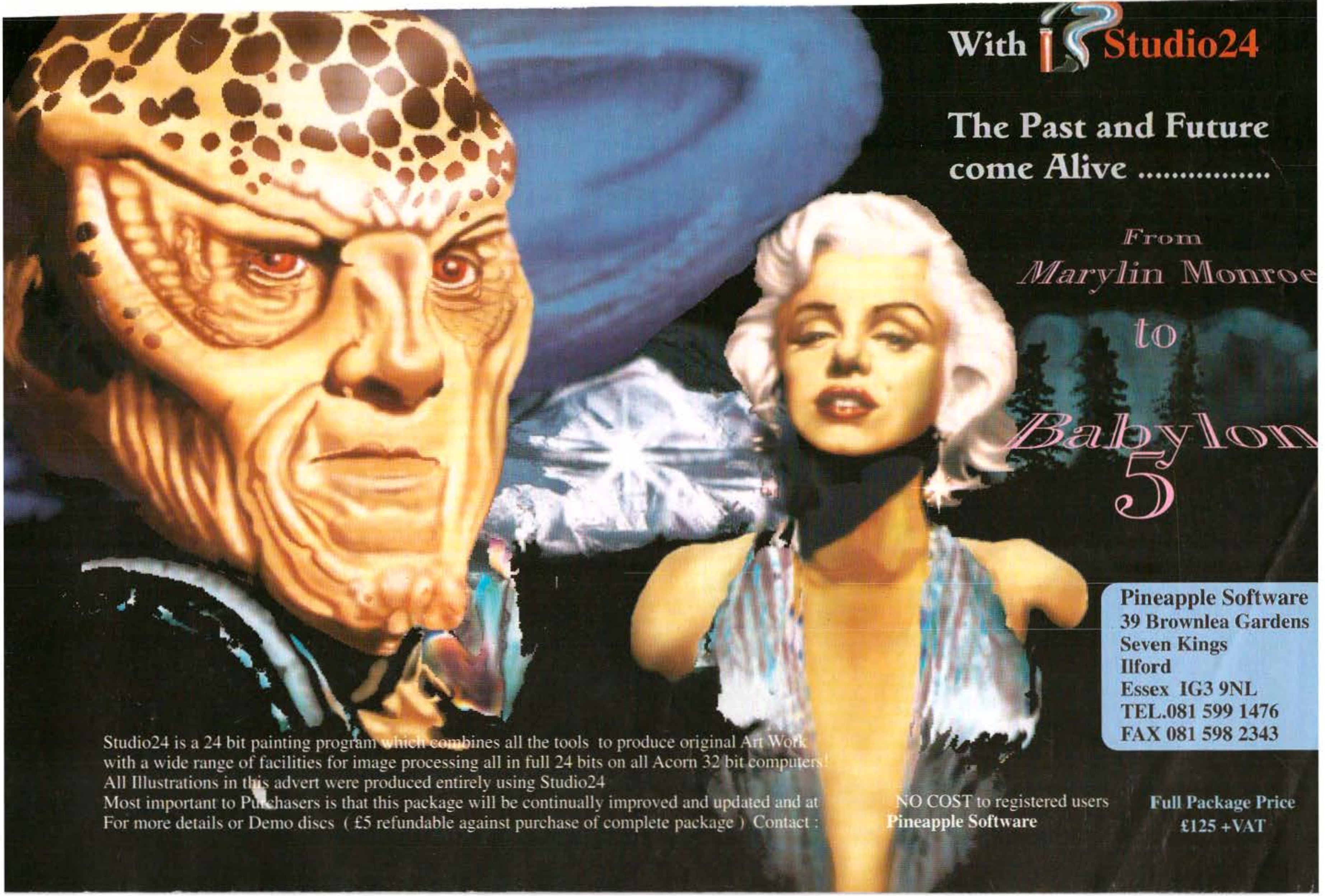

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